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Exploration of the Potential Use of Meta Programmes in Accounting Education

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Exploration of the potential use of meta programmes in accounting education.

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Glamorgan Business School

Declaration

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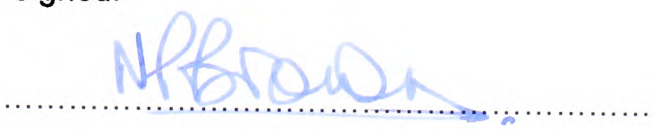

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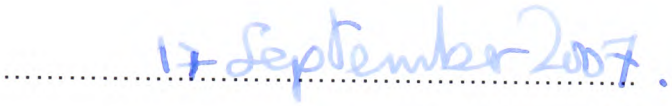

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I want to thank all my colleagues in Glamorgan Business School and in other faculties across the University of Glamorgan who have provided support, help and encouragement during what has been an extremely challenging and ultimately worthwhile journey towards this PhD. I also want to thank the many students, some of whom I have taught and others who didn't know me at all, who have given their time to my research.

I also want to thank the many friends I've made in the Accounting Education community who have provided an extremely supportive, encouraging and yet suitably challenging environment in which to develop as a researcher.

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My lovely wife Liz deserves a special mention. Liz has encouraged me and helped me through some tough times and had to have the patience of a saint to cope with all my various states of mind as I have struggled with this PhD for nearly 7 years. I want to thank my children Ben and Sophie, who also mean the world to me, and who have provided great encouragement and help along the way.

Dedication

I dedicate this work, with my love, to Liz, Ben and Sophie and to my parents, Walter and Joan. Here's to enjoying the rest of the journey.

'The universe is change; life is what thinking makes of it' (Aureluis, Marcus (121 – 180) Meditations IV, p. 3)

Abstract

The overview provides a summary of research that explores the potential use of meta programmes in accounting education. Meta programmes are a model used within the field of Neuro Linguistic Programming (NLP). NLP is an eclectic discipline that offers a practical approach to understanding how individuals uniquely perceive the world and communicate with others. Meta programmes are a way of indicating an individual's unconscious thinking preferences that influence how a person perceives the world and creates their individual map of reality. Whilst there is considerable emphasis on meta programmes in NLP training and in a range of textbooks and articles, limited academic research had been completed on meta programmes and, before I started my work, none had been attempted in the context of accounting education.

I commence this overview by describing my accounting background and how I came to be interested in NLP and meta programmes. I then provide a discussion of the theoretical framework of NLP and meta programmes, and the relationship between my work and previous research in accounting education. This is followed by a discussion of the methodology I have applied in my research. The next section contains a

summary of each of my publications which includes the research undertaken, the approach I adopted in that research followed by the key findings and contributions to knowledge. I then summarise the research that has been completed subsequent to the work reported in my publications and provide suggestions for further research in this area. The next section contains a summary of the achievements arising from my research and finally the 6 complete publications which report my research in depth.

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in accounting education.

Section 1: Critical Overview

Introduction

In my early career, I trained as an accountant in a small practice, culminating in entry to the Institute of Chartered Accountants in England and Wales. As part of my preparation for the examinations, I completed an Accounting Foundation Course at North East London Polytechnic (now part of the University of East London). One subject on this course that particularly interested me was 'Behavioural Science', which explored how people interact. It was a refreshing change to have the opportunity to study how people communicate rather than studying facts and figures. I completed my accountancy examinations by attending revision courses with a private-sector tuition firm. I very much admired the highly professional lecturers who taught me; they had exceptional communication skills. On qualifying, I decided to pursue a career in lecturing which culminated in working as a regional manager and director for Chart Foulks Lynch (later known as ATC Chart), which is a private sector accounting training company. I appreciated the emphasis on professionalism and the high standards of tuition and related materials that were key to the success of this business. I gained experience teaching on a range of subjects as well as being responsible for writing and updating the associated study materials. After a time, I realised there were

limits to the extent to which I could progress the academic side of my career within this organisation.

In order to provide scope for personal and professional development I joined the University of Wales, Newport (UWN) in 1990. Here I developed my teaching and understanding of curriculum development across a variety of courses from professional accounting to undergraduate and masters programmes. During my time at UWN, I was part of a team of writers who were commissioned to write a study text for Financial Strategy, the final examination on the Association of Chartered Certified Accountants' (ACCA) syllabus at that time. Based on this material I subsequently produced a series of technical articles for the ACCA Students' Newsletter (now the Student Accountant Magazine). Whilst at UWN, I broadened my experience by tutoring Financial Strategy for the Open University on the master's level of the MBA Programme.

In 1998 I joined the University of Glamorgan, as it offered more potential to develop my teaching and research interests. In 2001 I successfully applied for membership of the Institute for Learning and Teaching in Higher Education (now the Higher Education Academy). As part of my staff development with the Open University, I attended an introductory seminar on Neuro Linguistic Programming (NLP) and was immediately impressed with its practical and innovative approach to communication. NLP courses offer an eclectic and practical form of training that involves developing an understanding of how individuals perceive the world and how we communicate. I was convinced that NLP was highly relevant to my development as an individual and as a lecturer.

Shortly after attending this introductory session, and with the support of the University of Glamorgan, I enrolled on an NLP Practitioner course with Realisation at Stenhouse in Cardiff in September, 1999. Here I had the privilege of experiencing NLP training with Liz Burns and Ian Newton; they provided a thoroughly professional and ethically sound approach to the training. I progressed onto the NLP Master Practitioner and NLP Trainer Training courses, which I successfully completed in November, 2001, qualifying as a Master Practitioner and Certified Trainer of NLP. The approach adopted in these training courses was ideally suited to my preferred way of learning, with opportunities to participate in practical exercises and work in small groups with other students. These courses were outstanding and have had a substantial impact on my understanding of myself and others, the way I communicate and my approach to teaching.

It was during my NLP training that I came to recognise the tremendous potential for applying NLP in my work in the academic context. I noted in particular the major influence of meta programmes on how an individual communicates. Meta programmes are defined as *'unconscious filters which direct what you pay attention to, the way you process any information you receive, and how you then communicate it'* (Ready and Burton, 2004, p. 117). The importance of meta programmes was particularly pertinent during the NLP Trainer course, where we as delegates were made aware of how influential meta programmes are on our individual approach to teaching and communication. Since NLP training is a very practical and experiential form of training, which involved considerable amounts of work in small groups, it enabled development of my intrapersonal, interpersonal and interviewing

skills. I was able to put this understanding into practice immediately in my dealings with colleagues and students and in my teaching. I had found a subject that I felt sufficiently passionate about to embark on what has proved to be a major research stream.

What makes an understanding of meta programmes fascinating and challenging is that they influence our perception and communication at an unconscious level; the challenge is how to make individuals consciously aware of their meta programme preferences. However, my initial objective was to raise awareness of NLP amongst others involved in accounting education by demonstrating its potential benefits. I was aware of a degree of scepticism within academia, therefore I also wanted my work to improve the academic credibility of NLP. I wanted to help *'establish it as a professional discipline taking its rightful place alongside other approaches to the study of human functioning'* (Bostic St. Clair and Grinder, 2001, p. viii). I therefore began a research strategy that would eventually lead to a PhD by Publication.

At this point I had not undertaken any primary research. I had participated in various courses on research methods and dissertation supervision at UWN and the University of Glamorgan. I also attended an extremely useful and thought-provoking research methods workshop organised by the Committee of Heads of Accounting (CHA) and held at Leicester University in 2001. In 2001 I was successful in obtaining a £1,000 bursary from the CHA, which assisted me with my research.

Apart from preparation of teaching materials, and the textbook and technical articles referred to above, I had never written anything particularly

academic and certainly not a refereed journal article, so it was a challenge to learn how to write in a suitable academic style. My experience of reading and critiquing research papers was limited to articles published in the accounting discipline, particularly Corporate Finance, where, especially in the major US journals, the emphasis is on using models to analyse quantitative data and attempting to explain and predict what is happening in the financial markets. Undertaking research therefore presented me with many challenges, not least of which was having to start again as a student; the need to learn by reading texts and articles is not my favourite way of learning!

Before I discuss my research I think it important to explain the nature of NLP and its theoretical background since it is a very practical and applied discipline which synthesises a number of theoretical models. There is also a distinct contrast between mainstream accounting and NLP though not, as I will demonstrate, between accounting education and NLP.

Neuro Linguistic Programming (NLP)

Origins of NLP

Neuro Linguistic Programming (NLP) may be defined as: *'the study of the structure of subjective experience – how we create our own unique internal world'* (McDermott and O'Connor, 1996, p. ix). Knight (1995) defines NLP as: *'The study of what works in thinking, language and behaviour'* (p. 1). These contrasting definitions encompass what is to me the essence of NLP: the desire to better understand how individuals perceive the world and how to attain the excellent results achievable by others by modelling their work. My research interest in NLP is primarily in applying the first of these attributes: to help students and teachers to understand themselves and each other better.

NLP was developed in the early 1970's by Richard Bandler, a psychology graduate, mathematician and computer scientist, and John Grinder, an assistant professor of linguistics (de Luynes, 1995). It is not surprising therefore that linguistics, in particular transformational grammar, provides a fundamental part of NLP theory and that therapists were a subject of Bandler and Grinder's work.

The original studies involved Bandler and Grinder modelling individuals who were leaders in their respective field of therapy and consequently several of the techniques that are included on the NLP Practitioner course are of a therapeutic nature. Subsequently, NLP techniques have been applied in areas such as sports (Miller and Deere, 2000), training (O'Connor and Seymour, 1994; Garratt, 1999), marketing (Skinner and Stephens, 2003) and business (Knight, 1995; Jacobson, 1996).

I am more interested in how NLP might help people to understand better how they do what they do.

From the start of my NLP training I was struck by the practical and experiential nature of NLP and the sheer variety of techniques and approaches it encompassed. As the courses progressed I was made aware of the fact that Bandler and Grinder's work drew on a number of theories including transformational grammar (Chomsky, 1957), Gestalt therapy (Perls *et al.*, 1972), family therapy (Satir, 1972), the pragmatics of communication (Watzlawick, 1967) and the work of Gregory Bateson (Bateson, 2000) and Alfred Korzybski (Korzybski, 1994). Of the trainers on my NLP courses, Ian Newton in particular had a sound grasp of the underlying theory which he integrated into the training.

In spite of the extensive theoretical origins of NLP I have noted reluctance amongst academics to accept NLP. This may be partly because early attempts to research in the discipline of NLP included numerous *'design and methodological errors...'* (Einspruch and Forman, 1985, p. 589). Whilst there is an abundance of publications available to describe and explain NLP models and techniques, there is a limited amount of published research, particularly in the area of meta programmes. This is possibly due to the developers of NLP being more concerned about what works and finding how experts did what they did, rather than exploring the underlying theory to explain the rationale for their actions. As Tosey and Mathison, (2003, p. 375) suggest: *'NLP places more emphasis on developing practical observational and listening skills acquired through practice and apprenticeship, than on generating theory.'*

When Bandler and Grinder studied the work of Fritz Perls, Virginia Satir and Milton Erikson, the approach they developed was referred to as modelling. They were attempting to identify and document how these 'magicians' did what they did. The important feature of NLP is that it has *'never wanted to study the averages; NLP wants to study the exceptions'* (Hollander, 1999, p. 51). As reflected in one description of NLP as being the *'difference that makes a difference'* (Knight, 1995, p. iii), NLP is about what is different, what makes an individual exceptional at what they do? In the case of therapists, the question was: "what made them brilliant at their work?" and, in the case of patients who they were treating: "what made them think and behave in a way that made their life problematic?"

Objectives of NLP

Bandler and Grinder focused on how each individual therapist carried out their work. Because they were studying therapists, they were examining the language and behaviour patterns the therapists were using with their clients and how they were able to induce change in those individuals. They worked with and through the language and behaviour patterns of each person, seeking to discover how each client created their own subjective 'map' of reality. As Virginia Satir put it in the foreword to Bandler and Grinder (1975):

> *'(Bandler and Grinder) were interested in finding out how change takes place and in documenting the process. Knowing what these elements (predictable elements that make change happen) are makes it possible to use them consciously and, thus, to have*

useful methods for inducing change... they found patterns emerging which they could document' (p. vii)

The study of the therapeutic work of Milton Erikson resulted in creation of the Milton Model which was included as part of the NLP Practitioner course and can be used to induce a trance-like state in others or oneself (Burns and Newton, 1999). Working with Virginia Satir resulted in identification of the Satir categories which I find a fascinating and helpful model for understanding group dynamics (Satir, 1972). A group of people, for example a family, may be viewed as a system; this systemic thinking is associated with the work of Gregory Bateson.

In the introduction to Bandler and Grinder (1975) Bateson suggested that Bandler and Grinder were continuing what he and his colleagues had attempted to do previously:

'to create the beginnings of an appropriate theoretical base for the describing of human interaction' (p. ix)

In turn, Bostic St. Clair and Grinder (2001) acknowledged the importance of Bateson's work:

'it is difficult to enumerate the myriad ways in which this intellectual giant has influenced NLP... first, his ability to synthesize work across disciplines inspired us to attempt such syntheses. In particular, we are thinking of his work on the relationship between conscious and unconscious processes, on logical levels in learning and communication, cybernetics...' (p. 93)

The unconscious mind

An understanding of the links between an individual's conscious and unconscious cognitive processes is central to NLP. The importance of one's unconscious mind was highlighted right from the very first NLP session I attended and was a revelation to me. I became aware of the potential value of increasing one's awareness of one's unconscious thoughts and how the conscious or rational mind can limit one's thinking and actions; it can be better to trust one's intuition. In highlighting the unconscious mind NLP reflects post-modern thinking, which involves an *'increased emphasis on the importance of the unconscious'* (Jary and Jary, 1991, pp. 487, 488). I could see how this acknowledgement of unconscious processes profoundly affects how I view human behaviour, a view that is supported by Kragh (1995):

> *'Once we admit and understand the fact of the unconscious, our view of the world is fundamentally altered. We now understand human beings to have a dual nature, a conscious side which we know of and are aware of, and an unconscious side of which the individual knows nothing but of which our friends and colleagues may be very much aware.'* (p. 45)

In trying to understand how individuals behave, which involves understanding their conscious and unconscious mind, Bandler and Grinder were attempting to make explicit the *'structures inherent in all human behaviour...'* (Bradley and Biedermann, 1985, p. 59). They recognised that

these structures could be detected in the language and behaviour of the individual.

The role of language

Bandler and Grinder (1975) proposed that language was central to the task of psychology, which they saw as the *'understanding of human behaviour'*, noting that:

> *'the most sophisticated study of human, rule-governed behaviour is the study of human language systems.'*
> (p. 2)

Transformational grammar was highly influential in Bandler and Grinder's early work. This is acknowledged by Bostic St. Clair and Grinder (2001):

> *'The single most pervasive influence in NLP is the paradigm that was current in linguistics at the time of the creation of NLP. This paradigm – called Transformational Grammar (TG) – was one of the most brilliant contributions to the study of human behaviour offered in the 20th century'* (p. 66).

Chomsky posited that the 'surface structure' of language '*depended upon a Language Acquisition Device (LAD) that had as its base a universal grammar or a linguistic 'deep structure' that humans know innately and without learning'* (Stierer and Maybin, 1994, p. 65). Bandler and Grinder used this distinction to suggest that recognition of patterns in language ('surface

structure') could be used to identify the underlying meanings for the individual ('deep structure').

The importance of TG is reinforced by Bradley and Biedermann, (1985, p. 60), who posit that Chomsky, Bandler and Grinder have a common belief that *'communication is rule-governed behaviour which conforms to particular linguistic principles.'* I noted the influence of Chomsky in the NLP Practitioner Course in which we were introduced to the Meta-Model, which is based on transformational grammar (Bandler and Grinder, 1975).

What Bandler and Grinder achieved is clearly expressed by Bateson in his introduction to Bandler and Grinder (1975):

> *'They (Grinder and Bandler) have succeeded in making linguistics into a base for theory and simultaneously into a tool for therapy... Grinder and Bandler have succeeded in making explicit the syntax of how people avoid change and, therefore, how to assist them in changing...'* (p. x, xi)

The map is not the territory

Bandler and Grinder utilised transformational grammar to model and understand the relationship between the syntactic surface structure of the language used by an individual and the semantic deep structure, the underlying meaning or map of reality. This distinction between surface structure and deep structure raises an important issue, which is how well the map of reality reflects the external reality since it can be argued that *'there is an irreducible difference between the world and our experience of it'* (Bandler and Grinder, 1975, p. 7) or *'the map is not the territory'* (Korzybski, 1994, p.

750). Our use of language can restrict us. It is therefore important to understand: *'the role and limitations of language in how we build our maps of the world'* (Dilts and DeLozier, 2000, p. 849). I was pleasantly surprised by this notion when it was introduced to me during the NLP training. It was a stark contrast to the idea of a shared objective reality that is proposed by scientists, and yet it made perfect sense. Vaihinger (1924) explains this further:

> *'The organized activity of the logical function draws into itself all the sensations and constructs an inner world of its own, which progressively departs from reality... we hardly notice that we are acting on a double stage – our own inner world... and also an entirely different and external world'* (p. 159 – 160)

It was the quality of this internal map that affected the quality of life that the individuals experienced. As Bandler and Grinder (1975) propose, the way in which we comprehend the world *'determines to a large degree what our experience of the world will be, how we will perceive the world, what choices we will see available to us'* (p. 7). Bandler and Grinder (1975) describe two types of constraint that impact on how we perceive the world: social constraints – *'the categories of experience which we share with other members of the social situation in which we live'* (p. 12) – and individual constraints – *'all the representations we create as human beings based upon our unique personal history'* (p. 12). Whilst acknowledging the influence of these social constraints - which includes our language system - on how we perceive the world and create our own internal map of the world, Bandler and

Grinder (1975) suggest that it is the individual constraints that are the basis for the *'profound differences amongst us as humans and the way we create models of the world'* (p. 13). I was aware of how my model of the world differed from that of other people I knew. For example, my Father had a very different and strongly held Political view of the world from my own, so I decided that to prevent an argument, it was best to avoid that particular topic in conversations!

This acknowledgement of, and awareness of, how each individual creates their model of the world provides a major contribution to an improved understanding of how he/she communicate with others. It has helped me to improve my understanding of students and how I communicate with them and I wanted to bring this improved understanding to the attention of others.

Metacognition

Because of the contribution that NLP can make to enhancing communication, this became a major theme of my work, particularly as I was aware of the importance of communication in the context of teaching. The way we communicate, at a conscious and unconscious level, is through the use of verbal and non-verbal language, and tone of voice. Awareness of one's thinking processes is referred to as metacognition. Metacognition or metacognitive skilfulness is defined by Flavell (1976, p. 232) as *'one's knowledge concerning one's own cognitive processes and products or anything related to them'*. Metacognition is becoming increasingly important, as argued by Williamson (2005):

> *'one of the reasons for seeing metacognition as increasingly important... is because we're just now*

approaching implementation of the new agenda of personalisation. The personalised approach to education, at its best, will see learners actively involved in planning and managing their own learning goals' (p. 1)

NLP and meta programmes provide an approach, accessible to individuals without specialist training in psychology, for understanding metacognition.

It is the focus on understanding how we as individuals create our own unique internal map of the world that is of particular interest to me. Firstly I believe that a better understanding of how I create my view of the world can contribute to an improved quality of life and, on a professional level, increase my understanding of how I communicate with students and guide them in their learning. Secondly, it offers the opportunity to improve students' understanding of themselves. This is reflected in the aim of NLP as proposed by Dilts and DeLozier (2000, p. 852):

'to create the richest map (of the world) possible that respects the systemic nature and ecology of ourselves and the world we live in... NLP is a way of enriching the choices that you have and perceive as available in the world around you.'

Since NLP involves understanding unconscious mental processes, of which we may not be consciously aware, the first step in improving understanding is to raise an individual's awareness of those unconscious thinking processes, to enhance their metacognition. NLP is about

understanding the processes of thinking and communication rather than the content, a view supported by Einspruch and Forman (1985, p. 589):

> *'NLP is a way of organizing and understanding the structure of subjective experience and is concerned with the ways in which people process information but not necessarily with the specific content of that information. '*

I have become more aware of my unconscious thoughts since my NLP training. The challenge for me was whether I could enable teachers and students to increase their awareness of their unconscious thinking processes.

NLP offers the potential for individuals to have more control over their lives and the outcomes they achieve. Thus NLP provides a model of *'how to identify behavioural and communication patterns and interrupt these patterns in a deliberate way so as to achieve predictable outcomes'* (Einspruch and Forman, 1985, p. 594). Meta programmes represent one model that can facilitate an improved understanding of these *behavioural and communication patterns.*

Meta programmes

What are meta programmes?

Meta programmes (or metaprograms or meta programs) can be conceived as operating at a level 'meta' to or above the content of our conscious thoughts. Meta programmes tend to be context specific and recognisable in an individual's language and behaviour patterns, as posited by Charvet (1997, p. 12): *'their unconscious patterns are revealed in the structure of the language they use'.*

Meta programmes influence how each individual perceives the world and creates their individual map of reality as reflected in Ready and Burton's (2004) definition:

> *'metaprograms are some of these unconscious filters which direct what you pay attention to, the way you process any information you receive and how you then communicate it.'* (p. 117)

Meta programmes can be viewed as *'a description of a set of behaviours that are evoked in a certain context'* (O'Connor and McDermott, 1995 p. 79). I found meta programmes to be extremely influential during my NLP training. For example, I recognised the importance of being aware of the impact of meta programmes on my language and behaviour and therefore on how I structure and deliver training, and of the meta programmes of the recipients of that training. Therefore I decided to focus my research on meta programmes.

Meta programmes are described by Hall and Belnap (1999, p. 306) as *'mental/perceptual programs'* which influence how we perceive the world. There are a number of models that attempt to describe our mental processes, such as cognitive styles (Allinson and Hayes, 1996; Rayner and Riding, 1997) and thinking styles (Sternberg, 1997). In addition there are models of student learning, which include learning styles (Entwistle, 1981; Kolb, 1984; Honey and Mumford, 1992), the Reflections on Learning Inventory (Meyer and Boulton-Lewis, 1999) and the Expectations of Learning Accounting Inventory (Lucas and Meyer, 2005). There are models of personality (for example, Cattell *et al.*, 1970; Eysenck and Eysenck, 1975; Eysenck and Eysenck 1991; Costa and McCrae, 1992; De Raad, 2000) and psychological types (Cranton and Knoop, 1995; Jung, 1999; Myers and McCaulley, 1985).

NLP and meta programmes offer a different approach, as highlighted by Lawley (1997, p.7): *'meta programmes are not personality types, they are ways of processing information and communicating in the moment'.* Bodenhamer and Hall (1997) posit that *'Using these meta-programs, we will not discover what people "are"; we will rather discover how they function using their thinking...'* (p.8), with an emphasis on *'processes of "mind" operating in various contexts'* (p. 9). Meta programmes influence the way an individual communicates and may be context specific (O'Connor and McDermott, 1995; Bodenhamer and Hall, 1997; Charvet, 1997). This is acknowledged by Charvet (1997):

'meta programmes are a status report on how a person

responds to a given situation... meta programs are... a picture of how we interact with different environments or contexts' (p. 11).

For example, an individual may have one preference in a work context and a different preference in a social context. Some meta programmes, referred to as driver or dominant meta programmes, can have a major effect on an individual's behaviour in all contexts, whilst the influence of other meta programmes may alter from one context to another. Dominant meta programmes may help or hinder individuals in achieving their outcomes (Hall and Belnap, 1999). Further description of the individual meta programme patterns is included in Brown (2002), Brown and Graff (2004), Brown (2004), Brown (2005) and Brown (2006).

The model of meta programmes provides an approach that helps to raise an individual's awareness of his/her preferred ways of communicating and behaving; this raised awareness is an important first step in giving the individual more choice over the way in which he/she communicates with others and perceives the world.

How to identify meta programmes

Even though a large number of textbooks and manuals have been published on meta programmes (James & Woodsmall, 1988; Woodsmall, 1988; Bailey, 1991; Bodenhamer & Hall, 1997; Charvet, 1997) limited research had been done on meta programmes. My initial work involved identifying which meta programmes were documented in the literature – up to 51 patterns have been noted (Bodenhamer and Hall, 1997) – and what methods could be used to identify students' meta programmes.

Since an individual's meta programme preferences are reflected in his/her language and behaviour, ideally they are identified by using a qualitative approach such as the Language and Behaviour (LAB) Profile, which is a semi-structured interview technique (Bailey, 1991, Charvet, 1997). Use of the LAB Profile involves significant training and expertise and is very time consuming. Since my aim was to explore the relevance of meta programmes to accounting education and students in general, I needed a method for identifying meta programmes that could be applied to large numbers, without need for specialist training. Ideally, I needed to utilise a questionnaire that would be used to elicit a person's meta programmes. A questionnaire has many advantages including ease of administration and ability to administer to large numbers without a requirement for training.

A number of questionnaires were available for identifying meta programmes. For example, the generic Motivation Profile Questionnaire (MPQ) was developed by Arthur and Engel (2000) in the USA and Fiona Beddoes-Jones (1999) developed a Thinking Styles Questionnaire based on meta programmes and the work of Sternberg (1997). None of these questionnaires is specific to the context of higher education and there is a charge for their use. There was clearly a need for an instrument that could be used in the context of higher education; context is important since meta programmes may be viewed as context-specific, as I have explained above.

Previous academic research into meta programmes

Early research relating to the model of meta programmes was limited to studies to validate the LAB Profile (Godin and Sirois, 1995; Godin, 1997), to investigate sales reluctance amongst UK professional accountants

(Kearsley,1996) and career indecision (Sirois, 1997). Miller and Deere (2000) utilised the MPQ to examine the impact of meta programmes on the motivation and communication of baseball players. No work on meta programmes had been undertaken in the context of accounting education. Hence, at the time of each stage of the research, this work represented a new research stream.

I decided to identify an established questionnaire that could be applied to students. I chose the MPQ as it was available at an affordable cost, complete with a method for calculating an individual's score. Also it was generic as opposed to being oriented to the work context, as tended to be the case with viable alternatives. I needed a way of testing the MPQ since no validation evidence was available. The LAB profile represented a theoretically sound approach to testing the more practical questionnaire. I therefore completed a LAB Profile training course with Shelle Rose Charvet in November, 2000. In terms of research, limited work had been undertaken on NLP in a UK context, although more recently a network of NLP researchers has been established.

Accounting Education

No research work had been done in relation to NLP in the context of accounting education, making my work original research. Therefore, initially, it was necessary to establish the relevance and academic credibility of the discipline of NLP and meta programmes in accounting education.

In reviewing the accounting education literature, I identified a wide variety of themes. A useful accounting education research framework is the one included in Williams *et al.* (1988).

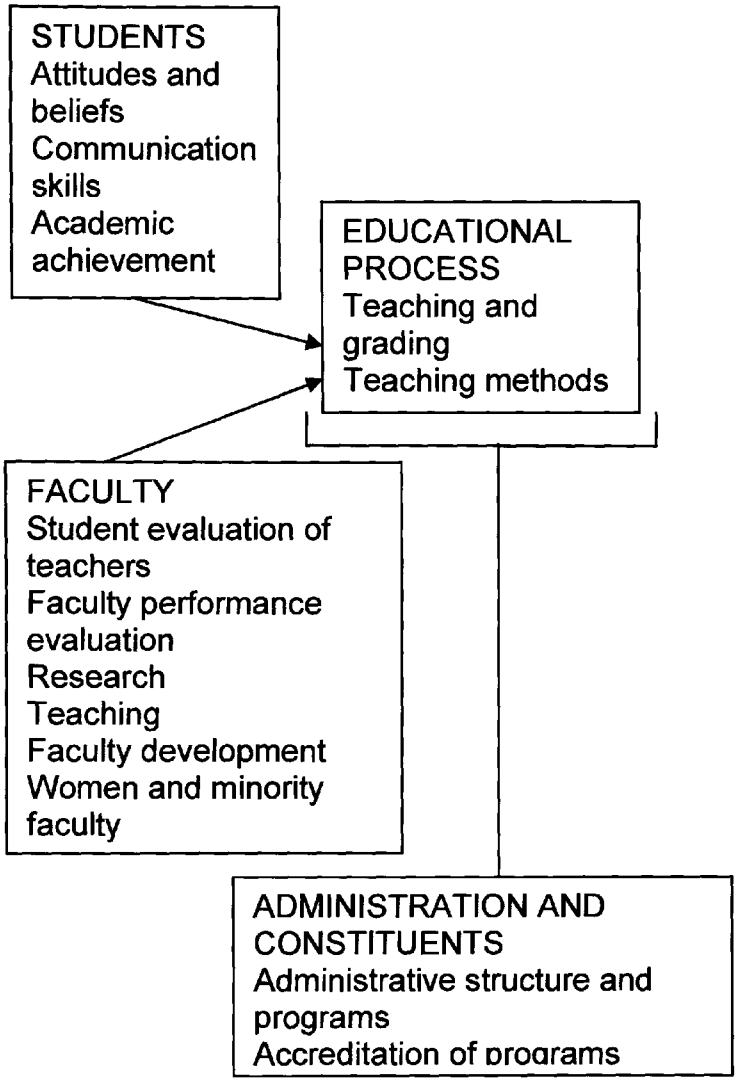

Figure 1: Accounting education research framework. (Source: Williams *et al.* (1988).

In relation to students, emphasis has been placed on the objective of accounting education to provide the basis for students to undertake lifelong learning with one of the key components being development of communication, interpersonal and intellectual skills. An important element in this process is for students to learn to learn so as to be able to operate as independent learners throughout their lives (Accounting Education Change

Commission, 1990; Kelly *et al.*, 1999; Rebele, 2002). Rebele *et al.* (1998b) cited research findings that supported the importance of students' communication skills and Rebele *et al.* (1998a) called for research to address the objective of self-regulated learning, a call echoed in Apostolou *et al.* (2001).

This idea of self regulation is an important theme embodied in the policy of Personal Development Planning (PDP), which was endorsed by the representative bodies within higher education (HE). An important objective of PDP is improvement of the capacity of individuals to reflect on what and how they are learning, and to take responsibility for their own learning (Universities UK 2000, para. 29). A vehicle for providing guidance and support to students is the system of progress files.

Kelly *et al.* (1999, p. 326) argued that for students to learn to learn *'implies a shift from knowledge-based educational approaches to approaches that are process-based'* a sentiment supported by Kragh (1995, p. 45) who proposed that we *'need to change the balance between the knowledge (cognitive) dimension and the experience (emotional) dimension in all levels of education.'*

Rebele *et al.* (1998b, p.198) suggested that *'further research in the area of student characteristics should be promoted'*. They went on to state that studies should *'involve more than one or two institutions to enhance generalisability of results'*. This theme of carrying out research across institutions was re-iterated by Apostolou *et al.* (2001). This desire for generalisability reflects an emphasis on a positivist methodology within accounting education, particularly in the USA.

In essence, meta programmes provide a model to inform our understanding of an individual and how that individual perceives the world, and there is therefore the potential to inform several aspects of accounting education, including students, faculty and the educational process. Whilst work had been done in accounting education involving models of cognitive style (Ramsay *et al.*, 2000), learning styles (Sangster, 1996; Duff, 1997, 1998, 2001; Eide *et al.*, 2001; Marriott, 2002; Duff, 2004), students' approaches to learning (Booth *et al.*, 1999; Lucas, 2001; Byrne *et al.*, 2002; Lucas and Meyer, 2005) and psychological types, particularly the Myers-Briggs Type Indicator (MBTI) (Hutchinson and Gul, 1997; Wolk and Nikolai, 1997; Oswick and Barber, 1998; Kovar *et al.*, 2003), no work had been done on NLP or meta programmes. There was therefore scope for developing a new research stream, which represented an opportunity and at the same time a challenge since I would have to develop an original approach.

Methodology

Philosophies underpinning accounting and NLP

My background and training provided me with experience of two contrasting philosophical approaches. The accounting discipline, which predominantly works within the positivist paradigm, emphasises objective evidence and the development of models that can have the ability to predict what might happen, for example, in the financial markets. It also involves the use of samples from which to infer qualities to a broader population, within certain statistical limits: a process that is essentially deductive in nature. Though the term positivism is still widely used to refer to the scientific approach, it is argued by Crotty (1998) that positivism has been superseded by a more pragmatic approach, post-positivism:

> *'it is not possible to find some Archimedean point from which realities in the world can be viewed free from any influence of the observer's standpoint... others... admit that, no matter how faithfully the scientist adheres to scientific method, research outcomes are neither totally objective nor unquestionably certain... claims to validity are tentative and qualified... it is this humbler version of the scientific approach... that has come to be known as post-positivism...'* (p. 41)

Kelly *et al.* (1999, p. 324), criticised the dominance of the *'mindset of the scientific method'* in accounting and in education. In contrast, NLP, which is consistent with the constructivist paradigm, deals with the subjective

experience of the individual, how each individual creates their unique model or 'map' of the world.

Yet there is evidence from both NLP and accounting education that alternative approaches can be applied. In accounting education, there is increased interest in qualitative accounting research (Hughes and Berry, 2000). Paisey and Paisey (2004) suggest that a more subjective approach can be beneficial in accounting research to provide *'richness of data'* (p. 86). They note that, of 209 papers published in 'Accounting Education: an international journal' in the period 1992 to 2001, 110 were *'primarily qualitative'*, 70 were *'primarily quantitative'* whilst a number of papers utilised a combination of qualitative and quantitative methods.

Whilst NLP is largely based in the constructivist paradigm, there is some argument, albeit with less emphasis, for adopting a more scientific approach. For example, Einspruch and Forman (1985, p. 594) propose that *'it is much more appropriate to approach it (NLP) from the framework of mathematics, biology, or cybernetics'* and Bostic St. Clair and Grinder (one of the developers of NLP) acknowledge that other approaches can be beneficial in NLP:

> *'while a discrete model is the more generally appropriate, we will be able to identify specific limited phenomena that play a significant role in NLP work that are best modelled by a statistical model'* (Bostic St. Clair and Grinder, 2001, p. 79)

A mixed approach

I could see there was potential benefit from adopting a mixed approach to my work and did not feel the need for a distinction to be drawn. As Hammersley (1992) argued:

> *'... I want to challenge the widely held idea that there are two methodological paradigms in social research: the quantitative and the qualitative... the distinction between qualitative and quantitative is of limited use and, indeed, carries some danger...'* (p. 39)

This sentiment is echoed by Gage (1989) who stated that:

> *'Social researchers agree with Howe (1988) that the "incompatibilists" - those who said that the quantitative and qualitative perspectives must of necessity be mutually exclusive and antagonistic – were simply wrong... most of these investigations with both kinds of methods (objective-quantitative and interpretive-qualitative methods) turned out to be more fruitful insights, understandings, predictive power, and control resulting in improvements in teaching.'* (p. 7)

I therefore believed it was helpful to use a combination of approaches to better understand what is a complex construct: unconscious thinking processes. This approach is supported by Roth and Mehta (2002) who propose:

'...using interpretive analysis and positivist analysis to inform one another. Interpretivist and positivist analyses, as we define them, are not only compatible within the same set of data; they may each help to achieve the goals of the other.' (p. 138)

This sentiment is also supported by Taskakkori and Teddlie (1998) who argued that:

'Most good researchers prefer addressing their research questions with any methodological tool available, using the pragmatist credo of "what works"... method is secondary to the research question itself, and the underlying worldview hardly enters the picture, except in the most abstract sense.' (p. 21)

When I commenced my research in 2000, my initial motivation was to explore how knowledge of NLP and meta programmes could be used to improve accounting education. A central task was identifying how to assess the meta programmes of individuals. The approach ideally needed to accommodate the fundamental nature of meta programmes: they influence, at a level meta to or above conscious awareness, how an individual creates his/her own subjective understanding of the world. This is consistent with the 'constructivist' epistemology, described by Crotty (1998) as:

'epistemological considerations focusing exclusively on "the meaning-making activity of the individual mind" (Gergen and Gergen, 1991, p. 127)' (p. 58)

Craft (2001, p. 131) proposed that NLP *'draws on social constructivism'* though she suggests that NLP, by acknowledging that *'reality does exist "out there"'*, is inconsistent with constructivism. I don't see a debate about the nature of *'reality... out there'* is relevant since the key is how each individual creates his/her own subjective understanding of reality and how well that understanding enables the individual to live his/her life. Tosey and Mathison (2003) also support the constructivist view:

> *'NLP may be constructivist in its emphasis on the way people create, act according to, and can change and reconstruct, their own maps of the world...'* (p. 377)

These views are congruent with my own view, stemming from my experience during NLP training, that NLP fits the constructivist paradigm. The emphasis throughout my NLP training was on how the individual perceives the world. The NLP Trainer course highlighted the need to understand the individual meta programmes of each delegate and of the influence of my own meta programmes on my training. It follows that research methodology should seek to discover how people establish their world-view - *'to understand how people interpret a phenomenon or event'* (Roth and Mehta, 2002, p. 136) - so should be constructivist in nature.

I was aware of the need within accounting education, and in education in general, to help develop students as autonomous learners on a wide scale, and to develop the ability in students to learn to learn. I therefore decided to investigate how to apply my understanding of NLP to larger numbers of students and specifically whether any of the questionnaires I had identified could be reliably used to identify students' meta programmes.

Hence, even though I recognised the essentially 'constructivist' nature of how individuals meta programmes shaped students' perception of reality, I needed a practical approach that could be applied to students across HE. This precluded the most methodologically appropriate approach, individual interviews, as they involved specialist training and were too time consuming. I also recognised the potential inadequacy of using a questionnaire: it could not adequately identify patterns of language, which includes the qualities of the individual's voice, and behaviour, including gestures and eye movements. It is difficult to identify an individual's unconscious thinking preferences of which the individual is typically unaware. I subsequently found that there was no validation evidence relating to any of the questionnaires available at the time. Therefore, for the initial work, it was essential to assess the validity of the MPQ. The research work I have undertaken has been approved by the Glamorgan Business School Ethics Committee.

The Publications

Paper 1: Brown 2002

When I commenced my research in autumn 2000, my initial objective was to find a practical and cost effective method for identifying meta programmes that could be administered to students in accounting education. I also wanted to identify whether accounting educators exhibited any dominant meta programmes since an understanding and application of meta programmes has the potential to enhance teaching and learning.

There was no published validation data relating to the most suitable option, the MPQ. I decided to use the more appropriate qualitative approach, the LAB Profile to identify the meta programmes of 14 accounting educators, with the objective of providing validation evidence for the MPQ. Each interview was recorded and transcribed.

This was an *ex post facto* research method in that I was observing the variables of interest, the accounting educators' meta programmes, and not manipulating those variables. I compared the results of the two methods which identified 7 common meta programme patterns and whilst, due to the limited sample size, it was not possible to establish construct validity, I was able to establish a 'good degree of correlation' between the two methods. I therefore felt sufficiently confident in the validity of the MPQ to use it in a larger study involving students (Brown, 2003 and Brown and Graff, 2004).

The results also indicated that there were dominant meta programmes amongst the accounting educators: 'proactive', 'people', 'internal', 'detail',

'towards'. This has implications for teaching. A strong 'people' preference is important for educators since a key part of their role is to communicate with people. A 'detail' preference suggests a liking for specific information. An extreme 'detail' preference could result in lack of appreciation of an overview of a subject, which can aid understanding, particularly in subjects such as strategic planning. Students with a preference for 'general' may find an educator's 'detail' preference difficult to follow and may get overwhelmed or frustrated by the volume of detail. I followed up this issue in later research (Brown, 2004).

I noted possible questionnaire bias with two patterns, 'proactive' and 'away from'. Apart from questionnaire bias, I was aware of other limitations with the MPQ: it is not contextualised and it only identified 9 patterns, which may not necessarily be the most relevant in the context of higher education. In addition, it was only available for purchase which limited the scope for its use with students.

I experienced early success with this research study in winning the prize for the 'Best Emerging Paper' at the British Accounting Association Special Interest Group in Accounting Education Conference in July 2001. This was particularly pleasing to me as it was the first academic conference paper I had presented.

Paper 2: Brown 2003

My objectives in this study, which was completed during the academic year 2001 to 2002, were to identify the dominant meta programme patterns of a sample of 62 (population 67) first year accounting undergraduates in the

University of Glamorgan. I also wanted to compare the students' meta programme preferences with those of 20 of their accounting teachers (population 22) to identify whether there were any differences or similarities between the two groups. A match or mismatch of meta programmes would impact on communication between the accounting teachers and their students.

In communication theory a transactional model of human communication proposes that *'communication involves a mutual exchange of information or influence based on negotiation and reciprocity'* (O'Sullivan *et al.*, 1994, p. 318). The sender of the communication is simultaneously receiving messages from the receiver and may be influenced by the receiver's response, as posited by Watzlawick (1967). The transactional model of communication is illustrated in Figure 2 (Figure 1.2, Adler and Rodman, 2000, p. 12).

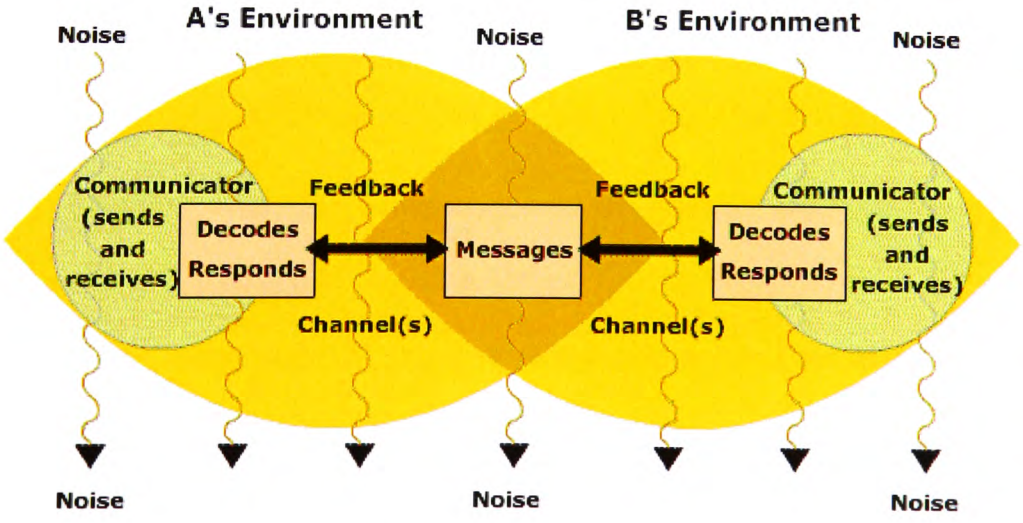

Figure 2: Transactional Communication Model

In this paper I posited that meta programmes determine the *'distinctive way in which the individual acquires, stores, retrieves and transforms*

information when communicating with others' (Brown, 2003, p. 160). A mismatch of meta programmes may increase the psychological noise that occurs when a teacher is attempting to communicate to a student or group of students.

I noted the importance of communication in the context of accounting and higher education (for example, Bhamorsniri and Guinn, 1991; Deppe et al., 1991; Maupin and May, 1993). Whilst research in accounting education had utilised methods such as the MBTI, no research in accounting education had been carried out using meta programmes.

Since I was interested in the impact of students' meta programmes on communication I focused on the meta programmes that would have most influence on each individual, the driver or dominant meta programmes. My analysis indicated a high degree of similarity between the students and their teachers. This suggested there is a good match between the meta programmes of the two groups as a whole, leading to good communication between the teachers and the students whose meta programmes are similar to the group mean.

Further analysis using exploratory factor analysis, suggested unsurprisingly, that these students were not one homogeneous group and that different subgroups of students within the group may exhibit different combinations of dominant meta programmes. Consequently, I suggested that at least some of the students may have experienced difficulties with understanding their teacher as a result of having different meta programme preferences.

The study was limited by being based on a single university and on use of the MPQ. Also the 9 meta programmes identified by the MPQ, of the total of 51 meta programmes that have been identified (Bodenhamer and Hall, 1997), may not include the meta programmes that are dominant for a particular individual.

I was particularly pleased when the journal paper reporting the results of this research won the 'Annual Prize', awarded for the best paper published in 2003 in the peer-reviewed journal *Accounting Education: an international journal.*

After finding that accounting students exhibited dominant meta programme preferences I wanted to explore whether students studying other disciplines had different dominant meta programmes. I was also interested in investigating whether there was any association between students' meta programme preferences and their performance in assessments. To do this I needed additional funding since I had to purchase the MPQ and needed additional time in which to undertake the project.

Centre for Excellence in Learning and Teaching project

To enable me to extend application of the MPQ to a larger and more diverse sample of students, I obtained funding from the University of Glamorgan's Centre for Excellence in Learning and Teaching (CELT). This project was important to me as it gave me the opportunity to extend my work beyond accounting education to business education in general.

This project presented me with many challenges including how to prepare a bid for funding, how to administer a questionnaire to large numbers of students and the logistics of managing a research project, including

statistical analysis of the data. Due to the volume of work involved, and the time I had available, I decided to ask a colleague, Martin Graff, to assist with the statistical analysis.

Paper 3: Brown and Graff 2004

The first objective of this study, which was completed in the academic year 2001 to 2002, was to identify whether there were any differences between the dominant meta programmes of students studying different disciplines. The second objective was to investigate whether there were any associations between students' meta programme patterns and their performance in summative assessments, and therefore whether meta programmes could be used as predictors of performance.

Whilst extensive work had previously been done on factors that may influence student performance, including what motivates students (Entwistle, 1981; Entwistle and Waterston, 1985; Elton, 1988) and cognitive style (Riding, 1991; Armstrong, 2000), no previous work had been done on the impact of meta programmes.

The MPQ was completed by 213 (population 298) year one undergraduates during The University of Glamorgan Business School's induction programme. Subsequently, workshops were held in which a summary of the questionnaire results was presented to the students. Students' meta programme scores were compared with the overall grades they achieved in the summative assessments for the 10 modules they studied during their first year. The students were split into two categories – accounting and finance only and other business school students.

Initially I compared the two groups to explore whether there were any differences in their dominant meta programmes. The t test results revealed significant differences (at the 5% level) between the meta programme scores for 4 pattern variables. This suggests that students with different meta programme preferences may be attracted to studying an accounting degree compared with a business degree. I next tested for associations between students' meta programme scores and their performance in assessments.

The findings suggest that there are strong associations between students' meta programme pattern variables and their performance in summative assessments. Some meta programme pattern variables were significantly negatively correlated with performance in summative assessments whilst others were positively correlated. This suggests that meta programmes may, in some cases, act as a predictor of performance in summative assessments.

Student feedback was obtained at the end of the workshop sessions. 90% of the 46 students who filled in the questionnaire thought the induction session should be continued in the following year and 79% of students who filled in the questionnaire felt that its completion and knowledge of its results gave them a useful insight into their behaviour and personality traits.

This study was limited as it was based on one department in one university and relied on the MPQ for identifying meta programmes. Other meta programmes could have stronger association with students' performance than those identified by the MPQ. I realised that further research was needed to explore whether gaining a raised awareness and

understanding of their preferred meta programme patterns, and the potential for changing them, could enable students to improve their performance.

Whilst the findings were interesting, they provided no indication of what impact meta programme preferences might be having on individual students' performance. I felt dissatisfied with relying on statistical data which was necessarily divorced from the rich subjectivity of the individual students' experiences. Some of the most interesting evidence I collected during this work was comments made by students during the workshops. Therefore, I decided to use a different approach in Brown (2004), an approach that reflects the constructivist nature of meta programmes. I hoped this would provide better evidence of the process by which individual students' meta programme preferences influence their perceptions.

Paper 4: Brown 2004

A theme of my earlier work that I wanted to further explore was the potential impact of meta programmes on communication between the accounting educator and the students, building on the findings of Brown (2003). I decided to explore students' perceptions of what constituted a good teacher. The study was completed during the academic year 2002/2003.

In view of the desire to identify whether students' perceptions were influenced by their meta programme preferences, a qualitative approach was adopted. Focus groups and interviews were facilitated in a relatively unstructured way to initiate discussion (Bogdan and Biklen, 1992). Although I had a preconceived model of meta programmes, the interviews and focus groups were relatively unstructured, involving a limited number of pre-structured open questions. When I conducted the interviews and focus

groups, as well as I was able, I put to one side ('bracketed') any preconceived ideas I had regarding what might constitute a good teacher (Lucas, 2001). Follow up questions, stemming from the students' responses in the interviews and focus groups, sought to probe into areas of potential interest in relation to the research aim. The comments relating to meta programmes that I cited in the paper emerged prior to any mention of meta programmes in the interview or focus group.

Previous research found communication skills to be rated as an important part of what represents good teaching (Reeders and Marshall, 1996; Willcoxson, 1998; Fisher, 2001). Other research had studied aspects of personality of teachers (for example Rushton *et al.*, 1987; Kourilsky *et al.*, 1996; Teachout, 2001; Cooper, 2001) and no studies had used the model of meta programmes.

Students' perceptions were also of interest to me since extensive use is made of students' evaluation of teaching effectiveness. Previous research had been completed on the reliability of student evaluations (for example, Koermer and Petelle, 1991; Tatro, 1995; Anderson and Siegfried, 1997; Watchel, 1998; Prosser and Trigwell, 1999; Worthington, 2002; Chen and Hoshower, 2003). No work had been undertaken with respect to the impact of meta programmes on students' perceptions.

Of the 69 students in the cohort, all students who agreed to take part in the research study were either interviewed (4) or took part in a focus group (22). The meta programmes of staff and students were identified using the MPQ, as reported in Brown (2003). I wanted to build on the work I had

started in Brown (2003) and further explore the relevance of meta programmes to communication between the student and the teacher.

A challenge I faced was how to structure the interviews. In earlier work I applied the LAB profile, in which I had received specific training. For this research, I was applying methods with which I was not as familiar – focus groups and semi-structured interviews. I then had the task of analysing a high volume of transcribed data.

The findings included examples of the impact of a mismatch of meta programmes of the student and teacher. In some cases, if there was a mismatch of style, even if the teacher met the necessary hygiene factors such as knowledge of the subject, this was insufficient and reduced the effectiveness of teaching for individual students. In contrast, a match of meta programmes contributed to a perception of high quality teaching on the part of the student. In one case this appeared sufficient to outweigh the need for basic 'hygiene factors' to be met. This raised doubt over whether students' opinions should be relied upon for assessing teaching quality. It also raised an important point in relation to students who may have different dominant meta programmes from their accounting lecturers. In Brown (2003) the accounting students and their teachers were found, on average, to have similar dominant meta programmes. This raised the question of how this might affect a student with dominant meta programmes different from their accounting teachers.

The limitations of the study include the nature of the sample, which comprised those students who volunteered to take part, and therefore leaves scope for response bias. In order to identify meta programme preferences of

students and teachers the study relied on the results of the MPQ which, as a self-administered questionnaire, has limitations. This study further convinced me of how influential meta programmes can be on communication and on the students' experience in HE.

This research was, to me, the most important work I had completed and I was particularly pleased when the paper was accepted by a well established mainstream education journal, bringing my work to the attention of a wider audience. Yet I still wanted an application of NLP and meta programmes to benefit education as widely as possible.

Having successfully applied the MPQ in two studies, I was aware of the potential benefits of using a questionnaire in raising the awareness of meta programmes of a large group without the need for specialist training. I recognized that the MPQ had two major limitations: firstly it was generic whereas I wanted something that could be used in HE and secondly, it was expensive.

I therefore decided that, in spite of the limits of using a questionnaire, the best way forward was to construct my own questionnaire, an instrument that could overcome some of the limitations of the MPQ. In particular, I wanted a questionnaire that was specific to HE for use with students.

Glamorgan Business School Research Project

I recognised that developing a new questionnaire represented a major project and offered the opportunity to complete some major original research. Therefore, I applied for and was awarded funding by Glamorgan Business School to enable me to undertake this work over a 3 year period commencing in 2003. The project was separated into three phases. The first

phase, which was completed during the academic year 2003/2004, was to identify which meta programme patterns should form the basis for the questionnaire. Phase 2, completed during 2004/2005 involved the process of developing and pilot testing the questionnaire. Phase 3, which commenced in 2005 and is still in progress in 2007, involves further refinement and testing of the questionnaire.

This project presented me with several major challenges including how to develop a questionnaire that identifies mental constructs, the process of planning and bidding for funding and managing a major project involving several staff. I also needed to be proficient in SPSS, which I used extensively in the process of assessing the reliability and validity of the questionnaire. The first stage in the development process was to establish which meta programmes to include. Of the 51 meta programme patterns that have been identified it was necessary to select which patterns were most influential in the context of HE.

Given the fundamental nature of meta programmes in impacting on individual students' subjective experience in the HE context, I decided to use semi-structured interviews as the most appropriate approach. The outcome of the interviews was used as the basis for developing the questionnaire.

Paper 5: Brown 2005

The aim of this study was to identify which meta programme patterns were particularly influential on students' experience in HE and should therefore form the basis for a new questionnaire. 26 accounting majors and 7 interdisciplinary undergraduates were interviewed during the academic year 2003/2004.

I chose 'progress file' interviews as an appropriate context to use. The focus of the interviews was a discussion of the students' progress on their degree course, which provided opportunity for identifying which meta programme patterns were influential on their experience. Given the complexity of this process and the need to be as 'objective' as possible (Roth and Mehta 2002), the interviews were led by one researcher, while another researcher observed.

The interviews in this study differed from those held in Brown (2002), which utilized the LAB Profile, and from the interviews in Brown (2004), which used a limited number of open questions I had written specifically to explore the research question. 10 meta programme patterns were identified, which was a different combination of meta programmes to the patterns contained in the MPQ. In addition to meta programme patterns, beliefs about intelligence (Dweck, 2000) emerged as a key influence on students' behaviour.

The questionnaire was therefore based on 10 meta programme patterns together with an additional category relating to beliefs about intelligence. Consequently the broader term '*metacognitive patterns*' was adopted to describe the patterns in the final questionnaire, which was called the *Metacognitive Pattern Indicator (MPI)*.

I was delighted when this work was accepted for publication in such a prestigious international journal as the *Journal of Accounting Education*. The next stage was to develop the instrument itself.

Paper 6: Brown 2006

The aim of this study was to develop and test a new self-administered questionnaire that could be used to identify the *metacognitive patterns* of

students in HE. The questionnaire was based on the 11 *metacognitive patterns* identified in Brown (2005).

Developing a new questionnaire instrument presented me with several major challenges. In Brown (2005) I had identified the patterns that would form the basis of the questionnaire. I now needed to construct the questionnaire itself and to test it on a sample of students. This involved decisions regarding how to design the questionnaire and how to word the individual items. In order to facilitate statistical testing of the questionnaire, I needed to administer it to a large sample of students. This involved liaising with colleagues across the University of Glamorgan. As well as a paper version of the questionnaire, an online version was developed. Students completing the online questionnaire immediately received an individual profile of scores.

There was a precedent for the approach I adopted. Several questionnaire-based methods have been developed and validated to identify mental constructs. For example, the MBTI (Myers and McCaulley, 1985) identifies an individual's psychological types, and the Sixteen Personality Factor Questionnaire (Cattell et al, 1970) identifies personality factors. Nevertheless, this involved investigating how best to do the impossible: quantify an individual's mental constructs.

I needed to decide how best to structure the questionnaire. Since meta programmes are identifiable in an individual's language and behaviour and can be context specific I decided to design question items in a way which reflected those attributes appropriate to each *metacognitive pattern*. From earlier work I was aware of the importance of identifying the strength of

preference for a particular pattern, something which the MPQ achieved in a limited way, and therefore a Likert scale (1932) was chosen.

The questionnaire was administered to 862 students across the University of Glamorgan; a cross section of students but not a random sample. The *MPI* was administered to students by two methods: a paper-based questionnaire completed by 731 students in classrooms and an online version by 131 students in computer laboratories.

Statistical analysis indicated that, by excluding items with poor reliability, 20 of the 24 pattern variables met the criteria for internal consistency reliability: a Cronbach's alpha coefficient of at least 0.52 (Duff, 2001). The analysis also showed 6 pairs of conceptually opposite pattern variables, to be negatively correlated (5 pairs statistically significant at the 1% level, 1 at the 5% level). In addition, exploratory factor analysis revealed a total of six pairs of pattern variables that load positively and negatively respectively on the same factor. These findings are consistent with the way meta programmes are documented in the literature and yet no other research findings have been published that suggest, using statistical analysis, that it is appropriate to describe these pairs of pattern variables as conceptually opposite in nature.

The output of factor analysis comprised logical combinations or profiles of patterns. Factor 1 consisted of a profile of patterns: 'procedures', 'detail', 'external', 'sameness' and 'Aristotelian'. It makes intuitive sense that these patterns should occur together in contrast to factor 2 which comprised the conceptually opposite 'options', 'general', 'internal', 'difference' and 'non-Aristotelian' respectively. This represents a new theory which relates

combinations of patterns together into profiles. The underlying philosophy of NLP is that each person is unique and different and that therefore any combination of these patterns could occur. Yet the factor analysis results suggest that, although *metacognitive patterns* are independent, in the context of this university and this sample they can be linked in a way that is coherent. Whilst the concept of profiles has been identified in the context of thinking styles (Sternberg, 1997), this represents a new insight since no previous evidence of such profiles has been published in relation to meta programmes.

The potential existence of two groups of students with contrasting profiles has important implications for teaching. Their preference may influence how they would rather be taught. Some evidence of students preferring a teaching approach that matched their own preferences was identified in Brown (2004). Certain students preferred a 'step by step' approach, which is consistent with a 'procedures' preference, whilst another student preferred the opposite: a more 'spontaneous' approach, which would be more appropriate for someone with an 'options' preference.

Using the most reliable items in the instrument, I explored whether there were any statistically significant differences between the *metacognitive pattern* scores of students studying different degree programmes. Statistically significant differences (at the 1% level) were identified on 13 pattern variables. This was consistent with Brown and Graff (2004), in which we identified significant differences between the meta programme scores of accounting and finance students and other business students.

I extended this analysis by comparing the students' factor scores for different degree programmes. Again there were statistically significant differences between award groups for 7 factors. The accounting students had the highest score for factor 1 ('procedures', 'detail', 'external', 'sameness' and 'Aristotelian') and lowest score for factor 2 ('options', 'general', 'internal', 'difference' and 'non-Aristotelian').

Students' evaluation of the *MPI*, obtained via questionnaires, provided evidence that they found it easy to understand, easy to relate to self and relevant to their education. The usability of the *MPI*, by individuals not necessarily trained in NLP, was one of the major objectives of this project (Brown, 2005)

15 students took part in interviews and focus groups in which the questionnaire and its results were discussed. Students' responses included examples of the *MPI* raising awareness of metacognition and indications of relevance of the questionnaire to students' ability to learn to learn, an important aim of accounting education research (Rebele *et al.*, 1998a; Kelly *et al.*, 1999). Clearly more work was needed to refine the questionnaire and yet I was particularly pleased when the results of this work were accepted for publication in the highly respected *Accounting Education: an international journal.*

Contributions to Knowledge

My claim to original contributions to knowledge resulting from my research includes the fact this is the first research on meta programmes in the context of accounting education. In Brown (2002), I established a 'good degree of correlation' between two alternative methods used to elicit the meta programmes of 14 accounting educators: the MPQ and the LAB Profile semi-structured interview. The results indicated that there were dominant meta programmes amongst the accounting educators.

In Brown (2003), I used the MPQ to identify the dominant meta programmes of a group of first year accounting undergraduates. The results indicated that accounting students exhibited, on average, similar dominant meta programmes to their accounting lecturers and that the accounting students were not a homogenous group. The MPQ was also used to identify the meta programme preferences of students studying a range of disciplines in the Business School at the University of Glamorgan. Statistically significant differences (at 5% level) were identified between 4 meta programme scores of the accounting students and the other business students. In addition, statistically significant correlations were identified between students' meta programme pattern scores and their performance in summative assessments; this comprised a different combination of meta programme scores for the accounting students compared with the other business students. Some correlations were negative whilst others were positive (Brown and Graff, 2004).

Meta programmes were found to impact on accounting students' perceptions of their accounting lecturers. This included cases where, even

when 'hygiene factors' were met, students who had different meta programme preferences from the teacher, were left dissatisfied. In addition, a match of meta programmes contributed to a perception of high quality teaching on the part of the students. This appeared sufficient to outweigh the need for basic 'hygiene factors' to be met (Brown, 2004).

I found 10 meta programmes and beliefs about intelligence (Dweck, 2000) to be influential in the specific context of students' educational experience in Brown (2005). This was the first time this had been done in the context of HE. Meta programmes were found to affect the ability/inability of certain students to manage the educational process. In Brown (2006), a new questionnaire was developed and pilot tested – the *Metacognitive Pattern Indicator (MPI)* - to identify *metacognitive patterns* of students in the context of HE. This is the first questionnaire that identifies meta programmes to be developed for use in the context of HE.

Statistical analysis revealed question items for 20 of the 24 pattern variables that met the criteria for internal consistency reliability of at least 0.52 (Duff, 2001). Significant differences (at the 1% level) were identified on 13 pattern variables, based on the most reliable question items. Conceptually opposite profiles, which made intuitive sense, were also identified, which represents a new theory that relates patterns together into conceptually logical profiles; no other evidence of such profiles has been published in relation to meta programmes.

On-going work

Since completion of the development and pilot testing of the *MPI* in 2005 (Brown, 2005; Brown, 2006), a considerable amount of further work has been carried out in phase 3 of the research project, resulting in production and testing of a completely revised version of the *MPI*.

The results of the statistical analysis in Brown (2006) were used as a basis for re-examining the question items that assessed each pattern variable. Some items were revised whilst others were replaced. This process was completed in May 2006 when a revised paper-based version of the questionnaire was produced.

The database containing the online version of the questionnaire was also updated in the same format as that used in Brown (2006). In addition, I was successful in bidding for technical support from the University of Glamorgan's CELT, which has resulted in an enhanced presentation of the questionnaire and results (see Figures 3 and 4).

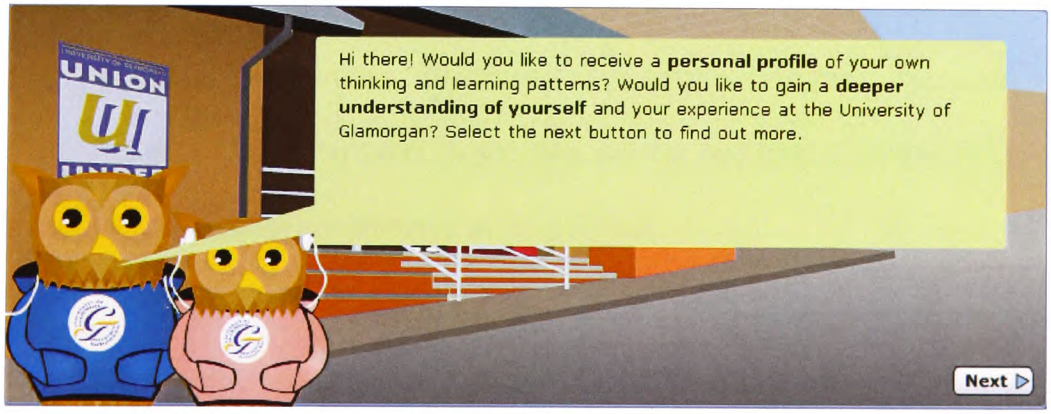

Figure 3: Extract from online introduction to the *Motivation Profile Indicator*

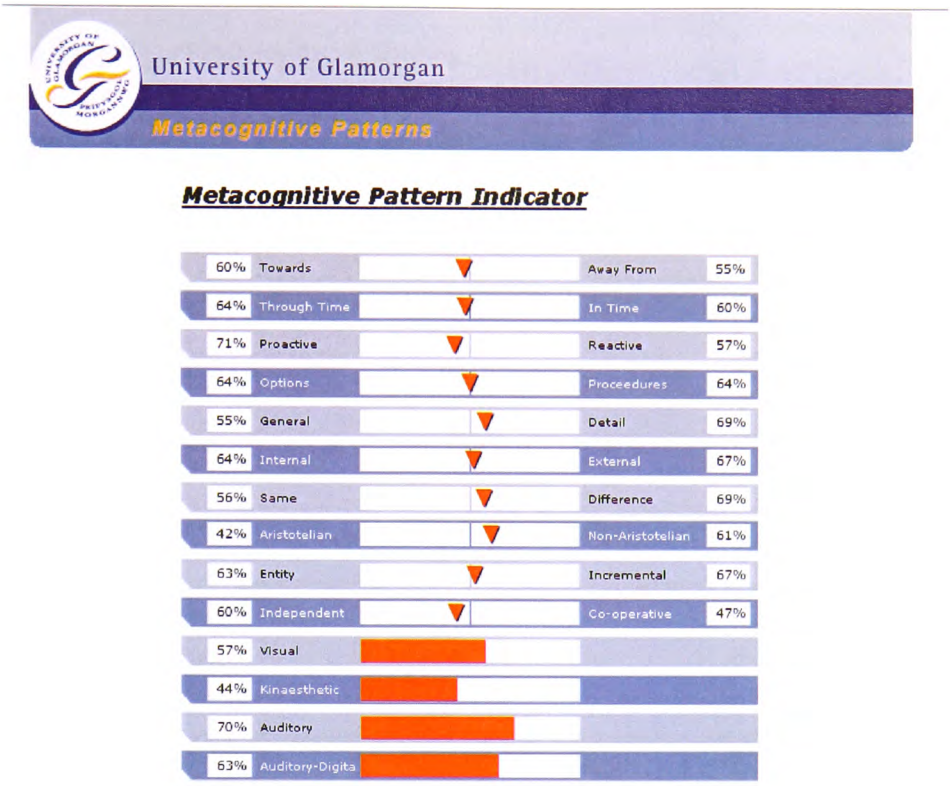

Figure 4: Extract from online results of the *Motivation Profile Indicator*

To date, the new version of the questionnaire has been administered to over 1,400 students across the University of Glamorgan and 69 students in another UK university. This sample contains students from a wide range of disciplines including accounting, business, education, nursing, law and geography. The results of the testing process will be presented at the BAA SIG Accounting Education conference in May 2007.

Scope for further research

Once available, the final version of the *MPI* can be used to undertake studies across institutions, the type of work called for by Rebele *et al.* (1998b) and Apostolou *et al.* (2001). Other initiatives have already started, including translation of the revised questionnaire into Hungarian and administering to students in a Hungarian university. In addition I have started a longitudinal study, based on students on a masters programme in the University of Glamorgan, to assess whether patterns change during the period of their studies.

Additional work is required, to include samples of students from other universities, to investigate further the new theory I have developed that suggests the concept of two distinct profiles of *metacognitive patterns*, evidence of which was reported in Brown (2006).

More work is needed to assess whether there are associations between *metacognitive patterns* and factors such as gender, programme of study and ethnicity. Additional work is needed to investigate further whether students who perform less well on a course, or fail or withdraw from a course, have any distinguishing *metacognitive patterns*, building on the findings of Brown and Graff (2004). In Brown and Graff (2004), we noted some consistency between the results for the MPQ and the findings of Armstrong (2000). Further work should be done to follow up these findings.

I am aware from student feedback that the current format for presentation of results could be improved. There is a reliance on written explanation of pattern scores with the same explanation provided to every student, regardless of their particular score for that pattern variable. More use

can be made of other forms of representation including diagrams/pictures and sound, to reflect the range of different meta programme preferences of the students.

More work is needed to investigate how the questionnaire result might be further integrated into the students' university course, whether as part of their PDP or as part of skills development. I am currently working with a colleague who is utilising the questionnaire and its results in the context of PDP with geography students.

There is also considerable scope for refining the MPI for use in different contexts. I am at present in discussions regarding development of a version for use with 14-19 year olds in mentoring situations. Having started this research stream in the context of accounting education, there is considerable potential for extending the work to education in general.

Overall, I feel that this work, in particular the 6 publications which are in a range of high quality journals, demonstrates the value of the research I have undertaken. I was particularly gratified when the results of my qualitative study were accepted for publication in the highly respected international journal, the *Journal of Accounting Education*. Other highlights for me are the two prizes that were decided on by fellow academics in accounting education, particularly the prize for the best paper in *Accounting Education: an international journal*, in 2003. I am now looking forward to taking my work even further.

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Appendix one – Personal Achievements

2000/2001:

- CHA Bursary of £1,000.
- Prize for 'Best Emerging Paper' at the British Accounting Association Special Interest Group in Accounting Education Conference in July 2001.

2001/2002:

- £9,605 research project sponsored by the University of Glamorgan's CELT based on first year undergraduates across Glamorgan Business School.

2002/2003:

- Brown (2003) awarded 'Annual Prize' for the best paper published in the year 2003 in the peer-reviewed journal: *Accounting Education: an international journal.*

2003/2004:

- £15,710 Glamorgan Business School funded research project to develop, over 4 academic years, the *Metacognitive Pattern Indicator (MPI)*

2004/2005:

- Part of £10,000 research project team, funded by the University of Glamorgan's CELT, on the teaching of problem subjects in Glamorgan Business School.

2005/2006:

- Awarded technical support by the University of Glamorgan's CELT to provide enhancement to the online presentation and accessibility of the *MPI.*

Section 2: The Complete Publications

Paper 1

Brown, N. (2002) Meta Programme Patterns in Accounting Educators at a UK Business School.' *Accounting Education: an International Journal.* 11 (1) pp. 79 – 91.

Paper 2 (Prize-winning paper)

Brown, N. (2003) A Comparison of the Dominant Meta Programme Patterns in Accounting Undergraduate Students and Accounting Lecturers at a UK Business School. *Accounting Education: An International Journal.* 12 (2), pp. 159 – 175.

Paper 3

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Paper 6

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Paper 1

Brown, N. (2002) Meta Programme Patterns in Accounting Educators at a UK Business School.' *Accounting Education: an International Journal.* 11 (1) pp. 79 – 91.

Primary research:

14 accounting educators interviewed and completed the MPQ.

Contributions to knowledge

- First research on meta programmes in the context of accounting education
- Two alternative methods used to elicit the meta programmes of 14 accounting educators: the MPQ and the LAB Profile semi-structured interview. These can be seen to:
    - establish a 'good degree of correlation' between the two methods
    - indicate that there were dominant meta programmes amongst the accounting educators

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Meta programme patterns in accounting educators at a UK business school

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Abstract

The purposes of this study are to compare the results of two alternative methods of eliciting meta programmes, the Motivation Profile Questionnaire (MPQ) and the Language and Behaviour (LAB) Profile semistructured interview, and to identify whether accounting educators exhibit any dominant meta programmes. An individual trained to use the LAB Profile interviewed a sample of 14 accounting educators who then completed the MPQ. The results of the MPQ and the LAB Profile identified three common patterns, indicating a good degree of correlation between the two methods. Identification of the key meta programmes of the accounting educators may have benefits in their teaching and is the precursor to a larger study of the meta programmes of accounting undergraduates, which can now be undertaken in a cost effective way using the MPQ.

Keywords: behavioural traits, neuro linguistic programming (NLP), meta programmes, communication, teaching.

Introduction

Meta programmes describe behavioural traits that a person exhibits when interacting with other people, and may be identified in the language people use and the behaviour they display. Identifying people's meta programmes makes it possible to improve communication and motivate people by appropriate use of language to match their meta programme preferences. This use of meta programmes offers the potential to enhance teaching, improve lectures and increase students' motivation to learn. A person's meta programmes are usually determined following an interview with a trained Neuro Linguistic Programming (NLP) practitioner who completes a Language and Behaviour (LAB) Profile. This is a specialist and time-consuming task and the scope for using meta programmes in higher education, with high student numbers and limited resources, is therefore limited. However, a self-inventory questionnaire, the Motivation Profile Questionnaire (MPQ), has been developed (Arthur and Engel, 1995) that attempts to identify a subject's meta programmes. While the reliability of the MPQ has not been researched, its ease of administration makes its use in higher education more viable than the LAB Profile. If reliable, the MPQ can be administered to cohorts of students and their meta programmes can be compared to their lecturing staff, making it possible to improve the learning experience. Therefore the purpose of this study is to identify meta programmes of accounting educators using two

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distinct measurement tools, the LAB Profile semi-structured interview and the MPQ, and to attempt triangulation by comparing the results of these two methods.

A review of the literature helps establish the theoretical background to this area of research, including the theoretical origins of meta programmes, which are within the field of NLP. The paper explains the methods and the approach to the research process and reports the results of the LAB Profile interviews, which identify the educator's meta programmes, and compares them with the results of the MPQ. The paper then considers whether there are any consistently dominant meta programme patterns for those educators and discusses the reliability of the two methods and the findings. The limitations of the results and scope for further research are identified.

Literature review

Neuro Linguistic Programming (NLP) was developed in the early 1970s by Richard Bandler, a computer scientist, and John Grinder, a linguist. Bandler and Grinder's work combined a number of disciplines, including the fields of linguistics (Alfred Korzybski and Noam Chomsky), anthropology (Gregory Bateson) and psychoanalysis (Paul Watzlawick) (Bandler and Grinder, 1975).

The term NLP refers to a range of ideas and techniques that relate to patterns of thinking, language, and behaviour, and how these are manifested in communication. This communication may be talking to oneself or with other people. NLP is a 'brand new field within cognitive-behavioural psychology' (Bodenhamer and Hall, 1997, p. vii) and may be defined as: 'The study of the structure of subjective experience – how we create our own unique internal world' (McDermott and O'Connor, 1996, p. ix) or, alternatively as: 'The study of what works in thinking, language and behaviour.' (Knight, 1995, p. 1).

An individual's perception of reality often differs from reality itself. When we communicate with others our senses are exposed to an estimated two million bits of data every second (Lewis and Pucelik, 1993). Our conscious minds can only handle seven plus or minus two bits of data at any one time (Miller, 1956), so the brain needs ways of deciding what to pay attention to and what to ignore or 'delete' (Roth, 1990). Bandler and Grinder suggest that the brain applies three 'modelling' processes as we perceive what is going on around us: deletion, distortion, and generalization. Deletion literally means we ignore information while we can distort information by viewing it a different way. Generalization means to form a general notion by inference from one or more examples from our past experience. For example, we build up an understanding of what a chair looks like and its purpose from past experience, and we are able to generalize that understanding to allow us to recognize other chairs we encounter for the first time. Bandler and Grinder also suggest that each of us as individuals has unique filters that we apply to enable us to carry out our own particular deletions, distortions and generalizations so as to build our own unique understanding or representation of the world. These filters include our cultural background, our language, our beliefs, our values and our meta programmes.

The language we learn and use for communicating with others and talking to ourselves has structure and therefore may be described by a set of rules. In a similar way, human behaviour has structure and can therefore be described by a set of rules. NLP and meta programmes are based on the study and utilization of the inextricable link between

language and behaviour. As the originators of NLP, Bandler and Grinder (1975, p. 2) state:

> The most sophisticated study of human, rule-governed behavior is the study of human language systems.

The term 'meta' refers to being prior to and at a level above our thinking itself. There is a distinction between what we are thinking about, referred to as 'content thinking', and the way in which we think and pay attention to information, referred to as 'process thinking'. Meta programmes describe our individual 'process thinking' or thinking style, which is a higher logical level of thinking (Hall and Belnap, 1999). For example, if two people are discussing a holiday, the content of the conversation is the holiday. How language is selected and the aspects of the holiday that are focused on when communicating to the other person will be a function of each person's meta programmes. A person with a visual preference would use more visual language whereas a person with an auditory preference would use more auditory language. Each individual has a unique combination of meta programmes.

Meta programmes, also referred to as 'thinking styles' (Beddoes-Jones, 1999) or 'people patterns' (Woodsmall and Woodsmall, 1998), are the sorting principles or models which act as a series of distinctions by which people filter, sort, and organize sensory input to create and sustain their representations of reality and personal coherence (Burns and Newton, 2000). Meta programmes operate at an unconscious level, are powerful determinants of personality (James and Woodsmall, 1988) and may be described as:

> . . . patterns of human behavior. These patterns represent the different perceptual filters through which we evaluate that information, through which we are motivated and through which we take action. (Woodsmall and Woodsmall, 1998, p. 3)

Use of a meta programme can be context specific, be affected by our state and some meta programmes can be changed. In total 51 meta programme patterns have been identified (Bodenhamer and Hall, 1997). With meta programmes it is possible to plot degrees on a continuum and when eliciting meta programmes it is important to acknowledge that they are context specific. As Charvet (1997) advises: 'because our behavior can vary in different situations', it is important that when using LAB Profile questions the context has been 'clearly and specifically identified'. For example, we may or may not prefer certain meta programmes at work or in different work contexts and different meta programmes at home.

Some of the meta programme patterns we exhibit may be more significant or dominant and may be preferred in most contexts. These are referred to as 'driver' meta programmes (Hall and Belnap 1999). These meta programmes will have a significant effect on our behaviour and the outcomes we do or do not achieve.

Meta programmes influence the language we select in the process of communication with others (or with ourselves). As we recount or represent our experience of the world to others and to ourselves with language, that language will inevitably differ from the experience it represents because the language system we use acts as a filter. We use language when reasoning, thinking, fantasising or rehearsing in order to create a model of our experience of the world and in order to communicate our representation of the world to others. We are not usually conscious of the process of selecting words to represent our

experience and meta programmes enable us to categorize the language an individual uses, those categories forming a basis for identifying how that person has chosen his/her words (Bandler and Grinder, 1975). The particular language we choose, the specific deletions, distortions and generalizations that we decide to apply, are a function of the meta programmes that we prefer when we are in a particular context and the physical and emotional state we are in at the time of the communication. Some language patterns are common to different people and people who exhibit the same language patterns can exhibit the same behaviours. As the meta programmes we run can determine the language patterns we use, it is possible to identify people's meta programmes from their language (Charvet, 1997). Meta programmes can also be viewed as 'a description of a set of behaviours that are evoked in a certain context' (Bodenhamer and Hall, 1997) and observation of the behaviours a person exhibits provides another way in which that person's meta programmes may be identified.

Charvet (1997) states that identifying meta programmes is superior to methods of psychometric testing which tend to categorize people into 'boxes', giving them a 'label' which does not recognize the ability of people to be flexible and potentially shift their thinking and behaviour as situations or contexts change.

There is a limited amount of documented research that has been carried out to elicit people's meta programmes. The first study was undertaken in 1993 and involved analysis of data obtained from recorded interviews with 34 subjects (Godin, 1997). The second study, involving 84 people, concerned career decision-making (Godin and Sirois, 1995). These studies were based on using the LAB Profile, as developed by Roger Bailey in the early 1980s. Ten of the LAB Profile categories obtained a statistically significant reliability coefficient (Godin, 1997). A third exploratory study carried out using the LAB Profile regarding career decisiveness, also revealed inter-judge reliability that was statistically significant (Sirois, 1997).

A recent study used the MPQ developed by Arthur and Engel (1995) to elicit the meta programme profiles of two baseball teams. The MPQ took the baseball players less than 30 minutes to complete. By identifying the motivation traits of the baseball players, this study suggested ways in which coaches could motivate and improve communication with the players by choosing appropriate language that matches the players' motivation traits.

> Coaches could learn from this instrument (MPQ) to help 'impossible' players by communicating with them in appropriate language at the right time. (Miller and Deere, 2000, p. 70)

An understanding of meta programmes is therefore highly relevant to helping people understand themselves and others better, resulting in better motivation and communication. It is not just baseball coaches who seek to enhance motivation and communication. There are three purposes to lecturing: coverage, understanding, and motivation (Brown and Atkins, 1988) and therefore an understanding and application of meta programmes has the potential to improve lectures and enhance teaching and learning.

Communication involves a message that passes from one person to another person or other people and an essential prerequisite to effective communication is rapport or empathy. Rapport refers to:

> the process of establishing and maintaining a relationship of mutual trust and understanding between two or more people, the ability to generate responses from another person. (O'Connor and Seymour, 1995, p. 234)

Fundamental to rapport building is the process of matching others in their experience of the world. Matching can be achieved in several ways at several levels. Matching a person's meta programmes can be accomplished by reflecting his or her meta programmes in the language used to communicate with him or her, therefore developing a significant level of rapport at an unconscious level (Brown and Turnbull, 2000).

Method

The aims of the study were to compare the results of two alternative methods of eliciting meta programmes in order to identify whether accounting educators exhibit dominant meta programmes. This is an *ex post facto* research method as the researcher is observing the variables of interest, the accounting educator's meta programmes, and not manipulating those variables (Williams *et al.*, 1988). Inter-method triangulation was achieved by identifying the educator's meta programmes using two distinct methods. A trained interviewer used the LAB Profile in which he observed the language and behaviour of each interviewee. The educators themselves made separate selections when completing the MPQ. The results of these two methods were then compared to give two perspectives on the same phenomenon: the meta programmes of the accounting educators.

The LAB Profile interview structure, which is a set of open-ended questions the reliability of which has been established (Sirois, 1997), was used to identify the educator's preferred meta programmes (Charvet, 1997). Subjects also completed the MPQ, which comprised of sets of questions on eight meta programmes. The person completing the MPQ reads a series of statements describing behaviours and selects those statements that apply to him or her. The interview-derived meta programme profile was compared with the questionnaire-derived profile for the same subject to identify the four most preferred meta programme patterns for each subject.

The results obtained with the MPQ are subjective in that they are the judgement of the person completing the questionnaire. The LAB Profile is also subjective as the results are dependent on the judgement of the interviewer. In such instances the construct validity of the measurement is difficult, or even possible to determine. Construct validity of the questionnaire item is the 'extent to which its responses are systematically related to other external indicants of the attribute being examined' (Williams *et al.*, 1988 p. 33). In the case of this research, the external indicants are the interviews to be conducted. It is only possible to establish construct validity through the presentation of a substantial amount of data. However, since the output of the interview is qualitative in nature, and therefore does not lend itself to statistical testing, what represents 'sufficient evidence' remains a 'subjective judgement' (Lee, 1999). Consequently, it was not possible to establish construct validity in this study. Statistical analysis would not produce meaningful results as the sample size is small and because of the qualitative nature of the data.

Of the 51 meta programme patterns that have been identified, some cannot be measured using the MPQ, while others cannot be measured by the LAB Profile. However, there are seven meta programmes that can be identified by both the LAB Profile and the MPQ. These are shown in Table 1.

A meta programme can be conceptualized as a continuum stretching between the two extremes to which the above sets of labels apply. An individual is likely to exhibit different types of behaviour along that continuum. Illustrations of what these work place behaviours might be are shown in Table 2.

Table 1. Summary of meta programmes

Summary of the meta programmes common to both the LAB Profile and the MPQ	
Proactive	Reactive
Towards	Away from
Internal	External
Options	Procedures
Sameness	Sameness with exception / Difference
Detail	General
People	Things

Each section of the MPQ contains nine questions, each of which has alternative answers. The person completing the MPQ selects all the answers that apply so it is possible for someone to select each alternative answer to each question. This means that a high score, with a maximum of nine for a particular pattern, could occur in one of two ways:

1. Subject 5 scored 8 'towards' and 7 'away from'.
2. Subject 6 scored 7 'towards' and 2 'away from'.

It is possible to interpret both as having a preference for 'towards'. Table A1 in the Appendix has been prepared based on highest absolute scores, which would interpret subject 5 as having a stronger preference for 'towards' than subject 6. It is more meaningful to state that subject 6 has a stronger preference for 'towards' *relative to* 'away from' since there is a stronger bias towards that pattern. Table A2 in the Appendix takes into account this bias as it is based on the differences between the scores for each of the patterns so the ranking for the above subjects would be based on differences of:

1. Subject 5 difference on 'towards' and 'away from' of (8–7) 1.
2. Subject 6 difference on 'towards' and 'away from' of (7–2) 5.

Subject 6 has the stronger preference for 'towards' relative to 'away from'. This is what is implicitly done by the interviewer in the LAB Profile interview, the results of which are shown in Table A3 in the Appendix.

Results

In order to test the MPQ and the LAB Profile, each subject completed the MPQ and was interviewed to obtain a LAB Profile. The meta programmes of each subject were ranked in order of preference for each of the two methods. The most popular meta programmes were then identified with popularity of the meta programmes based on how frequently they occurred within the top four for the subjects in the sample. The frequency of occurrence of each pattern in the top four was then calculated. This was completed for each method and the results are shown in Table 3. The summary in Table 3 takes no account of where each meta programme was ranked for each individual.[1] The MPQ and the LAB Profile

[1] A simple weighting system was used to attempt to identify the strongest preferences amongst the subjects and this did not cause a significant change to the rankings. Of the six most popular meta programmes, the top six were the same with some minor changes in the order.

Table 2. Illustrations of meta programme behaviours

Pattern	*Illustrations of work place behaviours*
Proactive	People who have a 'proactive' preference may: • like to take action, take the initiative and act quickly, with little thought or analysis of the consequences • talk in short sentences and use direct and clear language.
Reactive	A reactive preference may result in people: • reflecting on and analysing a situation before taking action • wanting to fully understand a problem before taking action • being slow to act • talking in long, convoluted sentences which may be incomplete with a tendency to use passive verbs.
Towards	Towards motivation is indicated by: • a desire to achieve goals or targets • a person working to attain outcomes • a person not noticing any problems or omissions from their plan.
Away from	People with a preference for away from motivation: • are keen to look for and avoid problems • like to think of things that could go wrong so as to take preventative action • are motivated to meet deadlines • have the ability to identify what they don't want • may have difficulty identifying what they do want to achieve.
Internal	People who exhibit internally referenced behaviour: • know from within themselves that they are right • decide on the basis of their own internal criteria whether they have done a good job • treat other people's opinions or instructions as information which they will decide to agree with or follow, or not.
External	Externally referenced people: • rely on feedback from others or experts other than themselves to decide whether they have done something well and on what is the right thing to do • may take feedback from others very seriously • could interpret information provided by others as an instruction.
Options	People with an 'options' preference: • like to think of different ways to do things • are well-suited to problem-solving and systems design • are not very good at following rules preferring to make their own • like to start things and may not be as good at finishing them.
Procedures	Individuals with a 'procedures' preference: • like to do things in an orderly and procedural way • are motivated to follow instructions written by someone else • once they have started a procedure are highly motivated to complete it • who hit a problem following a procedure may find it difficult to think of ways round the problem and need guidance.

Table 2. Continued

Pattern	*Illustrations of work place behaviours*
Sameness	People with a 'sameness' pattern: • have a preference for stability and are likely to keep doing the same job for several years • may find it difficult to adapt to change • are good at doing routine tasks.
Sameness with exception	People with a 'sameness with exception' pattern: • like things to progress or evolve gradually so that most of what they do is the same but with some improvements.
Difference	People who sort for 'difference': • like lots of variety in their work and lots of change otherwise they get bored and restless • may take on too much work • are likely to change jobs or job functions frequently to keep themselves motivated.
Detail	People who prefer 'detail': • want to know exactly all the specific facts they can obtain • prefer to start with the specific details and work inductively to the general concept or 'big picture' • can get swamped by the amount of information with the danger that when the 'big picture' is identified it may be the wrong picture.
General	People with a 'general' preference: • are motivated to get an overview • prefer dealing with general, abstract concepts • may get easily bored with the details • may be difficult to follow as they recount random bits of the general overview or 'big picture' that they can conceive but that the person they are talking to may not be able to 'see'.
People	A person with a 'people' preference: • likes to work with other people and enjoys social interaction.
Things	People who exhibit a preference for 'things': • like to work with machines and systems or on tasks.

have identified three common patterns in the top five patterns, which indicates a good degree of correlation between the two methods.

The results reveal that there are certain dominant meta programmes amongst the subjects. There is an apparent strong preference for proactive, which is discounted as a questionnaire bias. This is discussed further in the conclusions section. A strong preference for 'people' is evident from the results of both methods. 'Internal' is ranked in the first five for each method, which is to be expected since subjects need to be confident of their own opinions. 'Detail' is in the top five for each method, which is perhaps not surprising since a lot of accounting work is of a detailed or specific nature. 'Towards' is ranked in the top six by both methods.

Table 3. Summary of the most popular meta programmes

	MPQ *Most popular meta programmes – based on largest differences*		*LAB Profile Interview* *Most popular meta programmes*	
Rank	*Pattern*	*Frequency (maximum possible 14)*	*Pattern*	*Frequency (maximum possible 14)*
1.	Proactive	13	People	9
2.	Towards	6	Procedures	7
3.	People	7	Towards	7
4.	Options	6	Detail	6
5.	Detail	6	Internal	5
6.	Internal	5	Away from	5
7.	Procedures	3	External	4
8.	General	3	Reactive	4
9.	Sameness with exception	4	Options	3
10.	External	1	General	3
11.	Reactive	1	Proactive	2
12.	Difference	1	Sameness with exception	1
		56		56

This result has implications for teaching. A strong preference for 'people' is important for educators since a key part of their role is to communicate with people. A 'people' preference indicates a preference for team working. There is anecdotal evidence that confirms that the subjects in the pilot study are part of a cohesive unit. A strong 'people' preference may result in subjects having less motivation for dealing with other aspects of their work involving 'things', for example, paperwork.

An 'internal' preference gives the subjects confidence in their own judgement and knowledge, which provides a basis for the students to place confidence in their teachers and the motivation to collect the information the latter need to form opinions on their subject. If this preference is extreme it could lead to educators not listening to or taking feedback from others seriously, particularly if it conflicts with their own opinion, which would not be desirable in the teaching context. Educators with this preference may become impatient with students who have an 'external' preference and who need a lot of feedback on their progress.

A 'detail' preference suggests a liking for details, required in areas such as compliance with accounting standards or audit guidelines or preparing accounts, which tend to be built up from the specific transactions to an overall, general summary. An extreme preference for 'detail' could result in a lack of appreciation of an overview of the subject, which can aid understanding, particularly in subjects such as strategic planning. Students with a preference for 'general' may find an educator's 'detail' preference difficult to follow and may get overwhelmed or frustrated by the volume of detail. An awareness of this 'detail'

preference and the alternative 'general' preference could lead to improved teaching effectiveness.

Educators with a 'towards' preference like to work to attain targets and may have a tendency to overlook problems. This may lead to an emphasis on the positive aspects of studying and what the students will gain from a course with less emphasis on the pitfalls.

Conclusions

The purposes of this study were to compare the results of the MPQ and the LAB Profile and to identify any dominant meta programmes in accounting educators in a UK Business School.

The MPQ and the LAB Profile have identified three common patterns in the top five patterns, which indicates a good degree of correlation between the two methods. Given this good degree of correlation, extending the study to elicit the meta programmes of accounting undergraduates can be carried out using the MPQ – the nature of the LAB Profile makes it impractical to apply to large numbers of people.

There is evidence of a strong preference for 'people', 'internal' and 'detail' meta programmes in the accounting educators tested. The MPQ is subject to bias in that it is based on people's conscious perceptions of their own behaviours. There may be a tendency for people to want to present in a certain way and therefore to select the answers that fit that preference. The MPQ is structured so that the questions for each meta programme are grouped together. Thus, the behavioural pattern each question relates to is clear to the person completing the MPQ.

There is a very high score and top ranking for 'proactive' in the MPQ results, a score which is significantly above the second score for 'people' which could indicate bias on the part of the subjects completing the MPQ. This contrasts with the low score and ranking of 11th for 'proactive' in the LAB Profile. It was therefore necessary to discount the result for 'proactive' as measurement bias. This discounting may have to take place if a similar result occurs in future surveys of accounting students.

The possibility that the interviewer may have introduced bias when using the LAB profile also has to be considered. In the interview context, the researcher could be applying his or her particular meta programmes when listening to the interviewee, and consequently may experience the language used by the interviewee in a very subjective way. The interviewer would have meta programme preferences which could affect the interpretation of the interviewees' responses. This bias may explain the reason for the presence of 'away from' (a strong meta programme preference of the researcher) which is sixth in the LAB Profile and which does not appear in the top twelve for the MPQ. Alternatively, questionnaire bias may explain this difference in results as the subjects may not wish to be viewed as 'away from' which can have negative connotations as a personality trait.

The MPQ states behaviour patterns, and the subject chooses those patterns that represent his/her preferred ways of behaving; or perhaps what the subject would like his/her behaviour patterns to be. Hence the MPQ requires a significant degree of 'self awareness' which is, by its nature, also subjective. This could have more significance when assessing students who may not have as much ability as the educators in identifying their own preferences. When using the MPQ in future studies the order of the questions can be changed so that it is not as easy to gauge the significance of each question. The MPQ

also takes no account of context, which is relevant, since meta programmes are recognized to be context specific. A further caveat is that the LAB Profile only includes a selection of meta programmes and similarly the MPQ includes a slightly different selection of meta programmes. This means that only certain meta programmes could be tested and compared. These may not include the driver meta programmes for a particular individual.

With student retention becoming increasingly important, it will be particularly interesting to identify whether there are any differences between the meta programmes of students who perform well on the accounting degree and the students who fail or withdraw from the course. For example, it may be desirable for accounting students to have a preference for 'detail' as the majority of the subjects involve a focus on detailed rules, laws, conventions and techniques. Students with a preference for 'general' may find this emphasis on detail frustrating or overwhelming as the need to take an overview is only relevant in some cases (such as systems and strategy). This potential mismatch in meta programmes may arise between educators with, for example, a 'detail' preference and students with a 'general' preference which could cause difficulties in teaching.

Further work can raise the awareness amongst educators of their meta programme preferences and the alternative patterns and how these preferences relate to those of the students. An ability to be more flexible and to accommodate different meta programme preferences in the language used and in the structuring of teaching materials and activities offers the potential to significantly improve the learning experience for students and teachers.

The results of this study are the first in the field and there is scope for widening the study to other institutions and to other disciplines. The author would welcome the opportunity for such collaboration.

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Appendix

Table A1. Summary of results of the MPQ based on absolute scores

	MPQ			
Subject	*Most popular meta programmes – based on highest absolute scores*			
1	People(9)	Proactive(9)	Detail(8)	Towards(7)
2	Internal(9)	Procedures(9)	Detail(8)	Proactive(8)
3	Proactive(9)	People(8)	Sameness with exception(8)	Towards(6)
4	Internal(9)	Proactive(8)	Detail(7)	Sameness with exception(6)
5	People(8)	Towards(8)	General(8)	Sameness with exception(7)
6	People(9)	Proactive(9)	Towards(7)	Options(7)
7	People(9)	General(9)	Options(8)	Proactive(7)
8	People(9)	Proactive(9)	Towards(8)	Internal(9)
9	Options(7)	Proactive(7)	Towards(6)	External(6)
10	Internal(7)	Options(7)	Proactive(7)	General(6)
11	Proactive(8)	Towards(7)	Detail(7)	Options(6)
12	Reactive(7)	Internal(6)	Procedures(5)	Detail(4)
13	Proactive(9)	Detail(8)	People(6)	Procedures(6)
14	Proactive(9)	Options(9)	Detail(7)	Towards(6)

Table A2. Summary of results of the MPQ based on differences between scores

Subject	*MPQ* *Most popular meta programmes – based on largest differences between scores*			
1	Proactive(9)	Detail(7)	People(4)	Towards(4)
2	Internal(9)	Procedures(9)	Proactive(8)	Detail(7)
3	Proactive(9)	People(8)	Sameness with exception(7)	Towards(5)
4	Internal(6)	Detail(4)	Sameness with exception(3)	Proactive(2)
5	People(8)	Sameness with exception(5)	General(4)	Proactive(3)
6	Proactive(6)	People(5)	Towards(5)	Options(4)
7	People(9)	Options(5)	Proactive(4)	General(3)
8	Proactive(7)	People(6)	Towards(6)	Internal(2)
9	Options(4)	Proactive(4)	Sameness with exception(4)	External(3)
10	Internal(5)	Options(5)	Proactive(5)	General(3)
11	Proactive(7)	Towards(5)	Detail(5)	Options(3)
12	Reactive(7)	Internal(6)	Procedures(5)	Detail(3)
13	Proactive(9)	Detail(7)	People(4)	Procedures(3)
14	Proactive(9)	Options(7)	Towards(2)	Difference(2)

Table A3. Summary of results of the LAB Profile Interviews

Subject	*LAB Profile Interview* *Most popular meta programmes*			
1	Towards(9)	People(9)	Detail(7)	Sameness with exception(7)
2	Procedures(9)	Detail(9)	Towards(9)	People(8)
3	Detail(9)	Procedures(9)	Away from(7)	People(7)
4	General(9)	Internal(9)	Options(8)	Away from(7)
5	People(8)	Away from(6)	Reactive(6)	External(6)
6	Towards(9)	Internal(8)	Proactive(7)	General(7)
7	Towards(8)	Proactive(8)	Procedures(8)	People(6)
8	People(9)	Internal(8)	Detail(8)	Procedures(7)
9	Towards(9)	People(9)	Options(9)	External(8)
10	Internal(9)	Options(8)	General(8)	Towards(8)
11	External(9)	People(8)	Procedures(7)	Towards(7)
12	Internal(9)	Reactive(9)	Away from(8)	Procedures(7)
13	Reactive(8)	Procedures(7)	Detail(7)	External(7)
14	Detail(9)	Away from(8)	People(7)	Reactive(7)

Paper 2 (Prize-winning paper)

Brown, N. (2003) A Comparison of the Dominant Meta Programme Patterns in Accounting Undergraduate Students and Accounting Lecturers at a UK Business School. *Accounting Education: an International Journal*. 12 (2), pp. 159 – 175.

Primary research:

62 accounting students and 20 accounting teachers completed the MPQ.

Contributions to knowledge

- Identified the dominant meta programmes of a group of first year accounting undergraduates
- Results indicate:
    - accounting students exhibited, on average, similar dominant meta programmes to accounting lecturers.
    - Accounting students not a homogenous group.

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A comparison of the dominant meta programme patterns in accounting undergraduate students and accounting lecturers at a UK business school

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Abstract

Meta programmes are a means of describing the behavioural traits that a person exhibits when interacting with other people. An understanding of meta programmes can improve communication between individuals and this may have implications for teaching. The purposes of this study are first to identify the dominant meta programme patterns of first year accounting undergraduates at a UK business school. An earlier pilot study validated use of the Motivation Profile Questionnaire (MPQ) to elicit the dominant meta programmes of accounting lecturers at the same Business School (Brown, 2002). Secondly, the students' meta programmes are compared with those of their accounting teachers to identify whether there are any differences or similarities between the two groups. The matching of the meta programmes of the teachers and students would enhance communication whilst major differences in meta programmes would make communication more difficult. A sample of 62 first year accounting undergraduates and 20 accountancy teachers completed the MPQ. The results indicate that, on average, the accounting students have similar dominant meta programme patterns to their accounting teachers. The implications of the findings for improving communication and therefore teaching are discussed, along with the scope for further research.

Keywords: behavioural traits, Neuro Linguistic Programming (NLP), meta programmes, communication, teaching

Introduction

The use of meta programmes represents a new area of investigation based on recognizing individual differences in personality which are reflected in the ways in which individuals behave and select language for communication. The model on which it is based is Neuro Linguistic Programming (NLP), which originates from cognitive psychology and linguistics. Meta programmes are a model for describing personality or behavioural preferences that a person exhibits when interacting with other people. This study explores how an understanding of meta programmes can improve communication and is therefore placed within the theoretical framework of communication theory.

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The purposes of this study are initially to identify the meta programmes of first year accounting undergraduates using a questionnaire-based measuring tool, the Motivation Profile Questionnaire (MPQ). The results of the MPQ are then used to identify whether the accounting undergraduates exhibit any dominant meta programmes and to compare these results with the meta programmes of the accounting teachers. A knowledge of students' dominant meta programmes makes it possible to improve communication on the part of teachers by reflecting those dominant meta programmes in the language used when conveying information to those students. Implications of any similarities and differences for improving the teaching/ learning experience of the students are then discussed.

Literature review

Meta programmes represent a new approach to describing personality preferences. Meta programmes lie within the field of Neuro Linguistic Programming (NLP), which is a model developed from cognitive psychology and linguistics (James and Woodsmall, 1988). NLP is relevant to improving an understanding of communication and how it may be enhanced through study of thinking patterns, language and behaviour. NLP was developed in the early 1970s by Richard Bandler, a computer scientist, and John Grinder, a linguist, and may be defined as: 'The study of what works in thinking, language and behaviour' (Knight, 1995, p.1).

An individual's meta programme preferences influence the language patterns and behavioural preferences chosen when communicating with and relating to others. Charvet (1997, p.11) defines meta programmes as:

> specific filters we use to interact with the world. They edit and shape what we allow to come in from the outside world. They also mould what comes from inside ourselves as we communicate and behave in the world.

Meta programmes operate at an unconscious level, at a level 'meta' to or above the content of the individual's conscious thoughts, and are powerful determinants of personality. This study explores the relevance of meta programmes to communication within the theoretical framework of communication theory, a theory which has roots as diverse as literature, mathematics, engineering, sociology and psychology (Craig, 1999). Communication theory models what happens when two or more people interact.

Communication may be described as 'the process of human beings responding to the symbolic behavior of other persons' (Adler and Rodman, 2000, p.2) where the symbols can be the letters used to construct the language we use (Griffin, 2000). The nature of the response of one person to another person's behaviour will be determined by his/her individual cognitive style where cognitive style is the distinctive way in which the individual acquires, stores, retrieves and transforms information when communicating with others. Meta programmes determine an individual's cognitive style.

The earliest articulation of a communication model was a linear model (Shannon and Weaver, 1949), a one way approach to communication, involving a sender in some way encoding a message which is sent via a communication channel to a receiver who decodes the message. The sender of a message has to encode the message, he/she has to convert the information he/she wants to communicate to the other person or people into a form that can be externally expressed through, for example, speech. The receiver of a message carries out the process of decoding the message by physically accepting the external signals and constructing meaning from those signals, or not (Burton and Dimbleby, 1988).

A refinement to this linear model is a transactional model, which is a more realistic representation of human communication based on the concept that 'communication involves a mutual exchange of information or influence based on negotiation and reciprocity' (O'Sullivan *et al.*, 1994, p. 318). A transactional model acknowledges that most personal communication involves two way exchanges: messages are sent and received simultaneously. The sender of the communication is simultaneously receiving messages from the receiver and may be influenced by the receiver's response. See Figure 1 (also Figure 1.2 Adler and Rodman, 2000, p. 12).

The ability to communicate with people is a crucial part of an accountant's role (Bhamornsiri and Guinn, 1991; Maupin and May, 1993), and oral and written communication skills are the most important skills to be developed within higher education (Deppe *et al.*, 1991). Earlier accounting education research has identified the importance, for accountants, of improving interpersonal skills (for example Peek *et al.*, 1995; Doost, 1999). It is possible to improve communication skills by understanding an individual's personality traits. Meta programmes, which are a way of describing character traits, have a fundamental influence on the way people communicate with each other by determining, at an unconscious level, the language used in that communication.

To date, some educational research in accounting has recognized differences in individual students by focusing on and measuring characteristics those students exhibit such as learning styles (for example: Wilson and Hill, 1994; Apostolou *et al.*, 2001) and approaches to learning, (for example: Gow and Kember, 1994; Kember and Sivan, 1995; Lucas, 1996; Duff, 1997, 1999; Lucas, 2001; and Mladenovic, 2002). Such methods of identifying characteristics of students can have problems and lack sophistication (Duff, 1997; Mladenovic, 2002).

Other research in the accounting education context has attempted to identify the elements that make up a person's personality including Jung's Psychological Types (1999) and the Myers–Briggs Type Indicator (MBTI). Studies that have utilized the MBTI include Hutchinson and Gul, 1997; Wolk and Nikolai, 1997; and Ramsay *et al.*, 2000). Another approach, the Sixteen Personality Factor Questionnaire (SPFQ), (Cattell *et al.*, 1970) measures personality traits and has been used for examining the relationship between personality and approaches to learning (Duff *et al.*, 2002). Hutchinson and Gul, (1997) examined the relationship between cognitive style, as measured by the MBTI, and cultural beliefs on students' group learning preferences. Wolk and Nikolai, (1997) used the MBTI to examine differences in personality preferences of undergraduate and graduate accounting students as

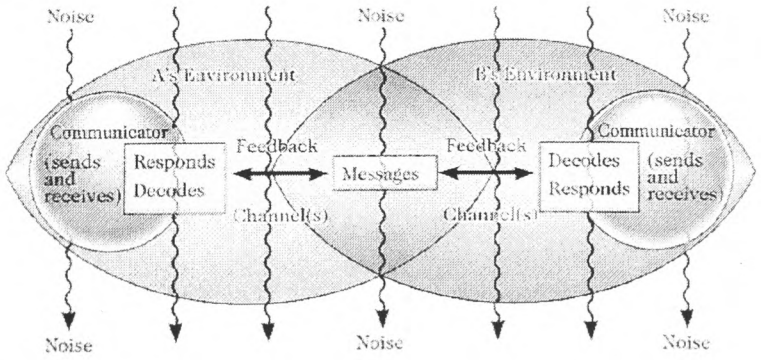

Fig. 1. Transactional communication model

well as faculty members; their aim related to the type of students attracted to accounting programmes. Further research has examined the relationship between cognitive style, as measured by the MBTI, and teaching methods in accounting education (Ramsay *et al.*, 2000). They focused on whether an individual's cognitive style impacts upon his/her preference for co-operative learning techniques. Other research examines the significance of personality to learning, using a five factor model for describing personality (Duff *et al.*, 2002). This study identifies personality traits, as measured by meta programmes, in order to explore communication between teachers and students.

Satisfying communication arises in part as a result of a match in communication style (Adler and Rodman, 2000) and, therefore, a match between the meta programme preferences of the teacher and the meta programme preferences of the student would be a sound basis for good communication. In communication theory, 'noise' refers to any forces that interfere with effective communication. Psychological 'noise' is attributable to forces within an individual that impair his/her ability to express or understand a message accurately. A mismatch of meta programmes may increase the psychological noise that occurs when a teacher is attempting to communicate to a student or group of students.

Identification of student meta programmes and matching of those meta programmes by the teacher would improve what can be done in the classroom, with the objectives of enabling the teacher to be more versatile (Street, 1998; Doost, 1999), enhancing communication and encouraging students to learn. Matching of meta programmes could also enhance the ability of the teacher to empathize with the student. Empathy is viewed as an important requirement of a teacher (Lucas, 2000), where empathy is 'the ability to understand each student's reactions from the inside' (Rogers, 1980)

A teacher's natural tendency is to explain things to others in ways that correspond with his/her own perceptions of how best to understand. This understanding will have been developed/sorted through the teacher's own individual meta programmes which may not coincide with the meta programmes of the students. This may lead to difficulties for students whose way of thinking is different from that of the teacher. This could be improved by using language that matches the meta programme preferences of those students (Lawley, 1997). To achieve this improvement requires meta cognition on the part of the teacher, an ability to be conscious of her/his own thinking styles and language patterns (Eraut, 1993) as a first step to developing the versatility to change language patterns to suit the students' needs.

In communication, appropriate use of language to match a person's meta programmes can enhance communication with that individual and increase his/her intrinsic motivation. In a recent study of the meta programmes of baseball players Miller and Deere (2000, p. 70) found that:

> Coaches could learn from this instrument (MPQ) to help 'impossible' players by communicating with them in appropriate language at the right time.

'Appropriate language' refers to the idea of matching the language used in communicating with someone to the meta programme patterns of the person to enhance the quality of the communication at an unconscious level.

Once a person's meta programmes have been identified, communication with that person can be improved by using language that reflects the person's meta programme preferences. In the teaching context, enhanced communication between the teacher and students has the potential to improve teaching and to increase students' intrinsic motivation to learn; intrinsic

motivation is related to a deep approach to learning which is to be encouraged (Gow and Kember, 1994).

Meta programmes

Meta programmes may be classified into two categories as 'simple meta programmes', which are the four 'basic meta programmes', and the 'complex meta programmes'. The complex meta programmes were originally developed by Richard Bandler and later expanded by Rodger Bailey (James and Woodsmall, 1988).

The first three 'simple meta programmes' correspond directly with the distinctions regarding personality in Jung's work: Introvert/Extrovert, Sensor/Intuitor, Thinker/Feeler. The fourth element is implied by Jung's work and appears in Myers–Briggs' work as the Judger/Perceiver preference. The complex meta programmes are the foundation for this research. Meta programmes differ from Myers-Briggs' profiles in that 'meta programmes are not personality types, they are ways of processing or sorting information and communicating in the moment' (Lawley 1997, p.2).

Meta programmes or sorting principles have a direct impact on the content of the messages sent when individuals communicate with each other as they influence the language chosen by the sender and the way the message is interpreted or sorted by the receiver. The sender of a message will sort the information available to them to construct the message using language that reflects their meta programme preferences.

Meta programmes can be identified in the language people use and the behaviours they display. When two people are communicating, if their meta programmes, and therefore their language patterns, are not aligned then they will find it difficult to understand each other (Lawley, 1997).

The meta programmes exhibited may be affected by our state and can be changed. Some meta programmes, referred to as 'driver' meta programmes, can have a significant or dominant effect on an individual's behaviour in all contexts, whilst other meta programmes may vary from one context to another (for example, behaviour patterns of students while with friends at college may or may not differ from their behaviours displayed while at home with their families). The dominant meta programmes may help or hinder individuals in achieving their outcomes (Hall and Belnap, 1999).

Method

Elicitation of meta programmes, which involves study of an individual's language and behaviour patterns, is a complex process. A highly-trained individual can identify meta programmes when in conversation with another individual whilst it is also possible to use the Language and Behaviour (LAB) Profile, which is a semistructured interview technique (Charvet, 1997). Both of these methods involve significant training and expertise, and are very time-consuming. A more practical method that may be applied economically in the context of education is the MPQ.

The MPQ, which is a self-inventory questionnaire developed by Arthur and Engel, (2000) and validated in an earlier pilot study (Brown, 2002), identifies meta programmes from behaviour patterns. The MPQ elicits nine of the total of 51 meta programme patterns that have been identified (Bodenhamer and Hall, 1997). However, some potentially important meta programmes cannot be measured using the MPQ. For example, with the meta programme 'match'/'mismatch', someone who has a preference for 'mismatch' will, when told something

by someone, have a tendency to disagree and think of the opposite to what has been said. This process of disagreement is necessary for the person with that preference to make sense of what they are hearing. Teachers may perceive students with that preference as awkward or argumentative because of their tendency to disagree. Someone with the 'match' preference will naturally tend to match the new information to what they already know and then see where it does not match, a potentially easier way to learn.

The MPQ lists examples of behaviour patterns which the subjects identify as being applicable to themselves or not. The MPQ was selected as it is a method which, unlike the Language and Behaviour (LAB) Profile used in the pilot study, can easily be used for larger numbers of students. The MPQ is economically viable to purchase compared with alternatives such as the 'Thinking Styles Questionnaire' (Beddoes-Jones, 1999). However, a questionnaire-based instrument that will identify all 51 meta programmes is not available at the present time.

Sixty-two first year accounting students (total 67) and 20 accounting teachers (total 22) completed the MPQ. As this is the first work on meta programmes in accounting, the initial samples are taken from one university. The MPQ comprises sets of questions on nine meta programmes and the student/teacher reads a series of statements, each of which describes a behaviour, and chooses those statements, if any, that apply to him or her. These behaviours are typical of each of the particular meta programme patterns. The results derived from the questionnaire are therefore dependent on the individual's perception of the applicability of the listed behaviours to himself/herself. The meta programmes that can be identified by the MPQ are shown in Table 1. Each of the first five meta programme patterns in Table 1 can be conceptualized as a continuum stretching between the two extremes. Each individual is likely to exhibit different types of behaviour along that continuum. The sixth pattern 'sameness'/'difference' is also a continuum, with the central part of the pattern described as 'progress'. Patterns seven and eight refer to what is paid attention to whilst pattern nine – 'seeing'/'hearing'/'sensing' – refers to sensory system preferences.

The MPQ is divided into sections, one for each meta programme pattern, each containing nine questions. Each question has alternative answers. The person completing the MPQ chooses as many of the alternative answers that apply to him/her, so a person can select some, all or none of the alternative answers to each question.

The study attempts to identify dominant meta programmes. Dominance was identified in two ways: first the mean scores for each meta programme were identified for each group and

Table 1. Summary of meta programmes

Summary of the meta programmes identified using the MPQ		
1. Towards		Away from
2. Internal		External
3. Options		Procedures
4. Proactive		Reactive
5. Detail		General
6. Sameness	Progress	Difference
7. Past/Present/Future		
8. People/Places/Activities/Knowledge/Things		
9. Seeing/hearing/sensing		

ranked (Table 2). Mean scores enabled statistical comparison of those means to assess whether there were any significant differences.

One concern with solely using mean scores is that, with meta programmes, each individual is likely to run 'driver' meta programmes and these, as far as they are identified with the MPQ, would be revealed by high scores for one end of a meta programme relative to the score for the opposite end of that meta programme. Hence the second method of identifying dominance, the difference between the scores for the two extremes of each meta programme, was calculated so as to best identify which four meta programme patterns were dominant for each individual.

A high score, with a maximum of nine for each meta programme pattern, could occur in one of two ways:

1. Subject A scores 9 'towards' and 7 'away from'.
2. Subject B scores 7 'towards' and 2 'away from'.

Both of these scores indicate a preference for 'towards' relative to 'away from'. The second score indicates a stronger preference for 'towards' and may be one of the more dominant meta programmes for that person. Hence the differences between the scores for a pattern (in the example above, the differences are 2 for subject A and 5 for subject B) may provide a better indication of the dominant meta programmes of each individual than the mean values which suggest which meta programmes are dominant for the group as a whole.

Results

The meta programme patterns are ranked in order of popularity based on the mean score for (Table 2) each meta programme pattern. These rankings are compared using Spearman's rank correlation coefficient. Spearman's rank can be used to test the strength of correlation between the two rankings since each group has answered the same set of meta programme questions.[1]

'Proactive', 'people', 'internal' and 'detail' appear in the first six for students and teachers whilst 'away from', 'sensing', 'sameness', 'difference' and 'things' appear in the lowest six for both students and teachers. This suggests a high degree of similarity between the two groups. The high ranking meta programmes with high mean scores are likely to be the preferred or driver meta programmes of the two groups and it is significant that there is such a strong similarity between the two groups. Both groups have a strong preference for several of the same meta programmes and a weak preference for many of the same meta programmes. Spearman's rank correlation coefficient is 0.827 indicating a high degree of correlation between the rankings of the meta programme preferences of the two groups. This suggests there is a good match between the meta programmes of the two groups as a whole, leading to good communication between the teachers and the students whose meta programmes are similar to the group mean.

[1] The mean scores of the respective groups of students and teachers were compared using ANOVA to identify if there was a significant difference between the two mean scores. With the exception of 'proactive' (p value: 0.018), which is ranked highest by both groups, there are no significant differences between the scores of the two groups for the top ten ranked patterns.

Table 2. Comparison of rankings based on mean scores

Teachers		*Students*	
1. Proactive	7.7	1. Proactive	6.5
2. People	6.2	2. People	6.4
3. Internal	6.1	3. Towards	6.2
4. Detail	6.0	4. Internal	6.2
5. Seeing	5.8	5. Options	5.9
6. Places	5.6	6. Detail	5.5
7. Towards	5.6	7. Hearing	5.0
8. Options	5.5	8. Seeing	5.0
9. Progress	5.3	9. Past	4.9
10. Past	4.8	10. Places	4.7
11. Procedures	4.7	11. Progress	4.7
12. Activities	4.5	12. General	4.7
13. Hearing	4.4	13. External	4.5
14. General	4.4	14. Procedures	4.3
15. Future	4.4	15. Present	4.3
16. External	4.3	16. Reactive	3.9
17. Present	4.3	17. Future	3.9
18. Knowledge	4.2	18. Activities	3.4
19. Sensing	3.9	19. Away from	3.3
20. Away from	3.5	20. Sensing	3.2
21. Difference	3.5	21. Difference	3.0
22. Reactive	2.1	22. Sameness	2.8
23. Things	2.0	23. Knowledge	2.6
24. Sameness	1.8	24. Things	2.5
Spearman's rank correlation coefficient: 0.827			

Discussion

The consequences of these results for teaching are discussed in detail, starting with the most dominant meta programmes.

Proactive (or active)/ reactive (or passive)

The teachers' highest score is for 'proactive' (7.7), which is an extremely high average given that the maximum score is 9. Similarly for students, 6.5 is very high and is also their highest score. In the pilot study the score for 'proactive' was identified as unusually high when using the questionnaire, compared with an interview-based method of assessment, possibly indicating an element of questionnaire bias (Brown, 2002). Whilst this casts doubt over the reliability of the absolute reading for 'proactive' (and consequently on the reading for 'reactive'), this bias is likely to affect the results for staff and students uniformly. As a potential for bias has been identified for this measure, it may not be possible to conclude that 'proactive' is the strongest meta programme preference. However, it can be asserted that the staff are more 'proactive' than the students.

A high 'proactive' score suggests that both groups prefer to take action rather than reflect on things. The students may learn best by doing rather than listening to others and reflecting on their opinions. This preference could, if it is a consistent preference, explain the liking students on the accounting degree programme have for learning in smaller group

workshops/tutorials which involve students undertaking activities rather than in larger group lectures where the students' role is more static and reflective. This raises the issue of what students actually 'do' or can be required to 'do' in lectures.

The higher student score for 'reactive' and lower student score for 'proactive' compared to that of the teachers may indicate a more passive culture among students. It may be linked to the fact that students have, in the main, just passed through the school system in which they are perhaps encouraged to be more 'reactive'. A 'reactive' approach is necessary as part of the process of synthesizing information and making informed decisions.

People/places/activities/knowledge/things

'People' is the second highest score for teachers (6.2) and students (6.4). This score indicates a strong preference for 'people' over 'places' (teachers 5.6 and students 4.7), 'activities' (teachers 4.5 and students 3.4), 'knowledge' (teachers 4.2 and students 2.6) and 'things' (teachers 2.0 and students 2.5). A crucial aspect of the teachers' role is the communication of knowledge to others, which involves establishing effective working relationships with students and fellow staff so a preference for 'people' is desirable. The strong 'people' preference amongst students suggests that they may enjoy class contact, prefer working in groups and other team-building activities and may be motivated by opportunities to enhance their communication skills. This preference suggests, unsurprisingly, that the students' motivation for attending university may be strongly related to contact with people and further developing their relationships with others.

Teachers' 6th highest preference is for 'places' (5.6), suggesting a concern for where they live and/or work with a strong sense of connection with their locality. The mean score the students exhibited for 'knowledge' (2.6) is significantly below the mean score for teachers of 4.2, with both scores indicating a low preference for 'knowledge' being 18th for teachers and 23rd for students. The low score for 'knowledge' is of great importance in the context of higher education where pursuit of 'knowledge' should be a core aim. A key part of the teachers' role is to seek new knowledge and assimilate that knowledge for onward communication to students and to pursue research objectives. A high preference for 'knowledge' would therefore be desirable. The score for teachers, though higher than the students' score, is low considering the maximum possible is 9. It would be interesting to compare this result with the score for teachers in a more research-based university. The preference for 'knowledge' may be partly a function of the subject. Accounting, with the majority of the staff having a professional qualification, may be less academically-grounded than other subject areas.

The low student score for 'knowledge' is of concern. It indicates that the students as a whole do not have a high motivation to gain more knowledge and may not have a natural interest in researching for information. The low 'knowledge' score could indicate that student-centred learning may be difficult to adopt and that time may be needed in tutorials/workshops for students to read articles and case studies. Again, it would be extremely interesting to compare this result with students in more research-led universities.

Both students and staff showed a low preference for 'things' which is consistent with the high preference for 'people'. A preference for 'things' would indicate an interest in having possessions such as cars, clothes, and collections.

Internal/external

The third highest preference for staff (6.1) is 'internal' and this is the fourth highest preference for the students (6.2). It could be posited that staff, being professionally-qualified

accountants, would tend to be highly 'internal' as they are relied upon to establish expert opinions on topics and to communicate their opinions to others. They need to have the confidence to know what information is needed in order to prepare lecture notes and course materials for students' use.

The high 'internal' preference amongst students suggests that they place a strong reliance on their own judgement. They have a preference for collecting the information they think they need. In lectures and tutorials they may be more likely to sit and listen and not say much unless they hear something they do not understand. This may be frustrating for teachers, particularly those with an 'external' preference, who need external feedback to convince them they are doing a good job. Students with an 'internal' preference may take instructions from the teacher as information, which they themselves will decide whether to follow. They may read other opinions and listen to the teacher's opinion before making up their own minds. If highly 'internal', the students may pay insufficient attention to the opinions of the teachers or the other experts in the fields of academic work they are studying. A high 'internal' preference (an extreme example being Margaret Thatcher who knew she was right!) may limit the ability to take on new learning. Students with a high 'external' preference could also be interpreted as exhibiting 'communication reluctance' since it could lead to a reluctance to participate in group discussions if they are very unsure of their own opinions (Hassall *et al.*, 2002).

The teacher's score for 'external' (4.3) was lower than the score for students (4.5). This score, especially when compared with the score for 'internal', would suggest that staff are less likely to seek the opinion of others or to seek external feedback on whether they are right. They are more likely to rely on their own judgement as to whether they are right and whether they are doing a good job. Against this, it could be preferable that some notice should be taken of feedback from students, peers and superiors so that ongoing improvements can be made to the teaching experience. The score of 4.5 for students suggests that, although the score for 'external' is lower than 'internal', there is a higher degree of 'external' referencing present among the students than amongst the staff.

General (or big picture)/detail (or specific)

The 'detail' score for staff (6.0) is their fourth highest preference and for students (5.5) is their sixth highest. The 'general'/'detail' meta programme may influence a student's approach to learning. A strong preference for 'detail' indicates a preference for starting with the details and working inductively up to the general overview or to broad concepts and a preference for detailed information. The teachers' score for 'detail' (6.0) is higher than their score for 'general' (4.4), which is ranked 14th and therefore a relatively low preference, though the difference is only 1.6, indicating a fairly balanced score. For students the difference is only 0.8 with 'detail' (5.5) and 'general' (4.7), which is a more balanced score. A reasonably even score would be desirable as there are situations where an ability to see the big picture is beneficial in, for example, essay planning and subjects such as strategy or information systems. An ability to focus on detail is necessary when involved in the more technical aspects of accounting. Also, if the teacher's 'detail' preference matches that of the students, this could contribute to good communication in the teaching context.

There could be a link between the 'detail'/'general' meta programme and the functioning of the two hemispheres of the brain. The left hemisphere is used to process 'logic, sequence, computation, categorization and verbal skills and starts with the pieces first' whereas the right hemisphere is used to process 'intuition, emotion, vision, humour, rhythmic

movement, image formation and other gestalt brain capacities and sees the whole picture first' (Hannaford, 1995 pp. 79, 178). Exercises, such as those suggested by Dennison and Dennison (1994), can be used to increase the neural connections between the two hemispheres of the brain which may impact on this meta programme pattern.

Seeing (or visual)/hearing (or auditory) /sensing (or feelings or kinaesthetic)

'Seeing' (5.8) is the teachers' fifth strongest preference. This suggests a liking for visual information, for example in the form of diagrams or mind maps. People with a preference for 'seeing' may prefer visual internal processing which involves use of pictures inside the head for learning and recalling information, and use of more visual language. Visual processing is fast processing and can result in fast speech and a relatively detached unemotional approach. The students' 'seeing' score (5.0) was ranked eighth which, whilst below the score for staff, is not significantly different. This suggests a general level of compatibility between the staff and the students with respect to 'seeing'. The teachers' score for 'hearing' (4.4) is 13th and a relatively low preference whilst the students' score (5.0) is similar and ranked seventh, which is just above their score for 'seeing'. The students' preference suggests they may prefer to receive information by listening to it. From a teaching viewpoint this implies they may favour hearing staff explain topics to them and like to learn from videos or audiotapes rather than via reading.

The scores for 'sensing' are both very low with staff averaging 3.9, ranked 19th, and students averaging 3.2, ranked 20th. This suggests a high degree of compatibility with a low preference for kinaesthetic processing. Kinaesthetic processing would result in a preference for taking notes and incorporating movement into the learning process. A low kinaesthetic preference suggests that students may like attending lectures and tutorials but prefer to be given copies of handouts and slides rather than taking notes.

There is a tendency to teach reflecting one's own preferences for 'seeing'/'hearing'/'sensing' and therefore the degree of similarity between the scores of the two groups could be beneficial for communication between the teachers and the students.

Towards/away from

'Towards' is ranked seventh for staff (5.6) and third for students (6.2). These high scores suggest a preference for setting goals and working towards achieving outcomes. Students are therefore more likely to be motivated by having targets to work towards with incentives such as prizes having a positive motivational effect. The students' score for 'towards' is higher, though not significantly higher. The opposite preference to 'towards' is 'away from' in which the staff scored an average of 3.5, ranked 20th and the students scored 3.3 which was ranked 19th so again the scores are similar indicating a high degree of compatibility between the two groups. A low preference for 'away from' may result in a lack of awareness of problems or things that could go wrong and a low motivation to meet deadlines. This may explain why some students fail to hand in work on time or fail to schedule their studies, particularly if they also have a 'reactive' preference.

Options/procedures

The teachers' score for 'options' (5.5), ranked eighth, is similar to that for students (5.9), ranked fifth. These are relatively high scores compared with the score for 'procedures' in which the teachers' mean was 4.7, and ranked 11th, and the students' mean was 4.3, ranked 14th. Though the options scores are higher, these scores are relatively balanced. An 'options'

style of thinking is useful when dealing with such issues as systems design or solving unstructured problems whereas a 'procedures' approach is more appropriate if dealing with technical areas such as preparation of tax returns, using accounts preparation packages or solving structured problems. Students with an 'options' preference are likely to prefer case studies and open-ended questions; those students with a 'procedures' preference are likely to struggle in that context.

Sameness/progress/difference

The teachers' score for 'progress' of 5.3, ranked ninth compared with a student score of 4.7, ranked 11th. The teachers and students show a preference for progress over 'sameness' and 'difference'. This suggests a preference for making gradual changes, an evolutionary approach rather than revolutionary. This is appropriate in the context of a degree course where it is desirable for staff continually to improve on their teaching and the students should aim for ongoing improvements in their performance. The teachers' score for difference of 3.5 is ranked 21st which compares with 3.0 for the students which is ranked 21st, indicating a low preference and a good match between the two groups. The teachers' score for 'sameness' is 1.8, which is their lowest score. The students' score is similarly low (2.8) and ranked 22nd. People with a 'sameness' preference want the world to stay the same and, when learning, will attempt to find consistencies between new information and what they already know. This is a good result since it is preferable that the staff and students have a low preference for 'sameness' as the accounting environment is one of constant change.

Past/present/future

The teachers' score for 'past' is 4.8, ranked tenth whereas the students' mean score was 4.9 and ranked ninth, so very similar scores for the two groups. This suggests a tendency to be focused on events that have taken place in the past, a preference for reminiscing and perhaps to be dissociated from the present. The teachers' score for 'future' is slightly lower at 4.4, ranked 15th which is similar to their 'present' score of 4.3, ranked 17th. The students' 'future' score is 3.9, ranked 17th and is lower than their 'present' score of 4.3 which is ranked 15th. There may be a lack of attention on the future, though the scores for the three patterns are similar within each group and between the two groups.

Further analysis

As this research focuses on nine meta programmes, exploratory factor analysis was used to gauge whether certain of the meta programmes appear to be correlated and therefore may be measuring the same underlying dimension or factor. In this context, if a particular combination of meta programmes is correlated and identified as one factor this could indicate the existence of particular personality types common to a number of students (Field, 2000). Alternatively, this could indicate that certain combinations of meta programmes tend to go together.

The factor analysis results in Table 3 reveal that, for this group of students, the first factor explains approximately 20% of the variation in meta programme patterns and is mainly a function of the meta programmes: 'people', 'towards', 'options' and 'proactive'. These four meta programme patterns are correlated and may therefore be describing different aspects of students with common personality traits. These meta programmes are, not surprisingly, ranked highly (1st, 2nd, 3rd and 7th) suggesting this factor relates to the

Table 3. Rotated component matrix year 1 accounting undergraduates

	Component			
	1	*2*	*3*	*4*
Seeing	–	0.667	–	–
Hearing	–	–	–	–
Sensing	–	–	–	–
People	0.655	–	–	–
Places	–	0.664	–	–
Activities	–	–	–	–
Knowledge	–	0.835	–	–
Things	–	–	–	–
Away from	–	–	–	–
Towards	0.808	–	–	–
Internal	–	–	–	–
External	–	–	–	–
Options	0.662	–	–	–
Procedures	–	–	–	–
Proactive	0.635	–	–	–
Reactive	–	–	–	–
Sameness	–	–	0.847	–
Progress	–	–	–	–
Difference	–	–	–	–
General	–	–	–	–0.751
Detail	–	–	–	0.887
Past	–	–	0.682	–
Present	–	–	–	–
Future	–	0.671	–	–
Eigen value	4.894	4.144	2.278	1.755
% of variance	20.39	17.267	9.494	7.311

For ease of presentation only values 0.6 or above or –0.6 or below have been reported.

dominant meta programmes of the group. The second factor, which explains 17% of the variation, predominantly comprises of 'seeing', 'places', 'knowledge' and 'future' all of which appear 14th or lower in the rankings, based on the four highest scores for each student. These are all different meta programme patterns to the components in the first factor. This second factor, which is uncorrelated with factor 1, may indicate that there is a separate subgroup of students who have a different set of personality traits. Factor 3 is mainly a function of 'sameness' and 'past'. Within factors 1 to 3, there are only two meta programme patterns that are common to the same meta programme: 'future' and 'past'. Factor 4 is a function of the 'detail'/'general' meta programme. Overall, it appears, unsurprisingly, that the students are not one homogeneous group and that different subgroups of students within the group may exhibit different combinations of dominant meta programmes. If the staff are one homogeneous group, which is extremely unlikely, at least some of the students may experience difficulties with understanding their teacher as a result of having different meta programme preferences.

Table 4. Comparison of rankings based on four most popular meta programmes, using differences

Teachers			*Students*		
1. Proactive	22%	18	1. Towards	14%	35
2. Detail	12%	10	2. Proactive	12%	30
3. Towards	11%	9	3. Options	10%	25
4. People	10%	8	4. Internal	9%	23
5. Options	9%	7	5. Detail	9%	22
5. Internal	9%	7	6. Progress	7%	18
7. Progress	7%	6	7. Past	6%	16
8. General	6%	5	7. People	6%	16
9. Procedures	4%	3	9. General	4%	11
10. External	2%	2	9. Procedures	4%	11
11. Seeing	1%	1	11. External	3%	8
11. Past	1%	1	11. Reactive	3%	8
11. Away from	1%	1	13. Present	2%	5
11. Difference	1%	1	14. Hearing	2%	4
11. Reactive	1%	1	14. Seeing	2%	4
16. Places	0	0	14. Difference	2%	4
16. Present	0	0	17. Away from	1%	3
16. Knowledge	0	0	18. Places	0.4%	1
16. Sensing	0	0	18. Future	0.4%	1
16. Activities	0	0	18. Activities	0.4%	1
16. Future	0	0	18. Sensing	0.4%	1
16. Hearing	0	0	18. Sameness	0.4%	1
16. Things	0	0	23. Knowledge	0	0
16. Sameness	0	0	23. Things	0	0
Total		80			248
Spearman's Rank Correlation Coefficient: 0.899					

In the initial analysis, shown in Table 2, the meta programme scores are compared based on mean scores. Table 4 shows the results of comparing the teachers and students by taking the difference between the scores for the two extremes of each meta programme to best identify the dominant or 'driver' meta programmes. Table 4 reveals a different ranking to Table 2, with a higher rank correlation and more common patterns in the top six (five rather than four), and therefore indicates a stronger similarity between the teachers' and students' dominant meta programmes.

Conclusions

When considering the meta programmes that are measurable by the MPQ, there is some matching of meta programme preferences between the accounting undergraduates and the accounting teachers. For teaching and learning, this demonstrates a certain level of compatibility on some meta programmes. This matching of meta programmes could contribute to good communication between the teachers and the students, and enhanced motivation.

With regard to the accounting undergraduates, the results, as would be expected, show that they are not a homogenous group. This suggests that, for teaching, there is a need for

flexibility of approaches to accommodate the different preferences. For high quality class teaching, teaching approaches could be extended to accommodate different meta programme preferences, to match those preferences by using language that matches the different meta programme patterns within the student group, and therefore communicate more effectively.

This could be achieved by first raising awareness amongst the staff of their own meta programme preferences and increasing the flexibility of the teaching approach by including alternative language patterns in lectures and handouts to match various student preferences. It would be interesting to assess whether, from a student's perspective, having similar dominant meta programmes to the teacher has any beneficial effects on the learning experience or on their perception of the learning experience. This could be carried out by interviewing students individually or in small groups. It would also be useful to assess whether raising awareness of meta programme preferences contributes to the ability of the students to reflect on their own thinking processes (meta cognition) with a resultant improvement in their learning experience.

Further work could identify meta programme patterns of students at other universities and address whether there are any differences between meta programmes in, on the one hand, teaching-led and, on the other hand, research-led universities. Another interesting issue is whether there are differences between cultures in which the issue of language is relevant, particularly where students who are being taught have English as their second language.

Finally, the meta programmes people run also apply to how individuals learn (Lawley, 1997) so there is potential for examining meta programmes in the context of students' approaches to learning and to assess the relationship between meta programme preferences and learning styles.

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Paper 3

Brown, N. and Graff, M. (2004) Student Performance in Business and Accounting Subjects as Measured by Assessment Results: an Exploration of the Relevance of Personality Traits, Identified Using Meta Programmes. *The International Journal of Management Education*. 4 (1), pp. 3-18.

Primary research:

213 students completed the MPQ.

Contributions to knowledge

- Using the MPQ, identified the meta programme preferences of students studying a range of disciplines in the Business School at the University of Glamorgan.
- Identified:
    - statistically significant differences (at 5% level) between 4 meta programme scores of the accounting students and the other Business students.
    - statistically significant correlations between students' meta programme pattern scores and their performance in summative assessments; this comprised a different combination of meta programme scores for the accounting students compared with the other business students. Some correlations were negative whilst others were positive.

24th February, 2005.

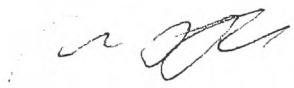
To Whom It May Concern:

Re Journal Article:

Brown, N. & Graff, M. (2004) Student performance in business and Accounting subjects as measured by assessment results: an exploration of the relevance of personality traits, identified using meta programmes. *The International Journal of Management Education* Vol. 4 No. 1 pp.3-18.

This it to confirm that, with respect of the above article, Nigel Brown contributed eighty percent of the work. I assisted with the data analysis and editing.

Yours faithfully,



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Student performance in business and accounting subjects as measured by assessment results: an exploration of the relevance of personality traits, identified using meta programmes

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Abstract

Meta programmes, part of the model of Neuro Linguistic Programming (NLP), are a well documented approach to identifying an individual's personality traits as evidenced by their behaviour or language.

This study attempts to identify whether there are any associations between students' meta programme patterns and their performance in summative assessments – and therefore whether students with certain meta programmes do better in their summative assessments. The students chosen were enrolled on a number of degree schemes at a UK Business School including Accounting and Finance, Business Studies, Human Resources Management, Marketing, and Leisure and Tourism Management.

A total of 213 first year undergraduates completed the Motivation Profile Questionnaire (MPQ) to identify their meta programme patterns and their questionnaire scores were compared with their performance in summative assessments.

Significant correlations between meta programme patterns and the students' assessment performance were found. In some cases the correlation was positive, which suggests that students with certain meta programme preferences perform better in their assessments. In other cases the correlation was negative, suggesting that students with other meta programme preferences do less well in their assessments. The 'people' and 'options' meta programmes were negatively correlated with performance for Accounting and Finance students but positively correlated with performance for other Business students. Therefore, given that meta programmes may be subject to change, identification of meta programmes could have implications for successful completion of modules.

Key words: personality traits, Neuro Linguistic Programming (NLP), meta programmes, academic performance

Introduction

Meta programmes are a means of identifying differences in the personality traits of individuals, these differences being reflected in the language and behaviour each individual displays. A student's meta programme preferences will impact on how they approach their studies, how they organise their time (or not), what motivates them or results in lack of motivation, and therefore may also impact on their performance in assessments.

This paper commences with an explanation of meta programmes followed by a review of other research on student performance in assessments, studying issues such as motivation, self-concept and cognitive style.

Earlier work on meta programmes in the context of higher education has investigated the dominant meta programme patterns of accounting educators and accounting undergraduate students (Brown 2002; Brown 2003*a*; Brown 2003*b*). This paper reports the results of an *ex post facto* study exploring the potential relevance of meta programmes to the performance of students in summative assessments. Students' meta programmes were identified using the Motivation Profile Questionnaire (MPQ). The scores were compared with the students' results in summative assessments. The implications of the results and scope for further research are discussed.

NLP and student performance

NLP, developed in the 1970s by Richard Bandler, a computer scientist, and John Grinder, a linguist, draws on a number of disciplines, including cognitive psychology and linguistics (Bandler & Grinder 1975*a*; 1975*b*; 1979). NLP originated from a study of some of the foremost cognitive therapists and communicators in the USA, including Milton Erickson, Virginia Satir and Fritz Perls, in an attempt to establish how these people performed so effectively (Garratt 1999).

NLP may be defined as: 'The study of what works

in thinking, language and behaviour' (Knight 1995: 1). NLP focuses on effective communication (Craft 2001), and an important aspect of communication is the concept of meta programmes and the impact they have on the language and behaviour used when communicating with others. Meta programme preferences influence, at an unconscious level, an individual's language patterns and behaviours adopted when communicating with and relating to others. Charvet (1997: 11), defines meta programmes as:

> specific filters we use to interact with the world. They edit and shape what we allow to come in from the outside world. They also mould what comes from inside ourselves as we communicate and behave in the world.

Meta programmes are also described as 'one of the basic building blocks that make up our personality' (James & Woodsmall 1988: 92). Meta programmes identify various aspects of an individual's behaviour. For example, Charvet (1997), categorises meta programmes as either 'motivation traits', each meta programme describing a different aspect of what motivates an individual, or 'working traits', referring to ways in which an individual prefers to go about their work. The meta programmes 'proactive/reactive', 'towards/away from', 'internal/external', 'options/procedures' and 'sameness/progress/difference' are included as motivation traits whilst 'general/detail' and 'people/places/activity/knowledge/things' are classified as 'working traits'. In addition, the MPQ includes the sensory system preferences 'seeing/hearing/sensing'. This article will argue that an improved understanding of meta programmes can contribute to knowledge of what contributes to students performing well or less well on their degree courses. This study is based on meta programmes identified by the Motivation Profile Questionnaire (MPQ), as shown in Table 1.

Summary of meta programmes
1. Towards——Away from
2. Internal——External
3. Options——Procedures
4. Proactive——Reactive
5. Detail——General
6. Sameness——Progress——Difference
7. Past/Present/Future
8. People/Places/Activities/Knowledge/Things
9. Seeing/hearing/sensing

Table 1: Summary of meta programmes

These meta programme labels are used to refer to different behavioural preferences that individuals display:

Towards/away from
'Towards/away from' describes the direction of an individual's motivation; it indicates whether someone is motivated 'towards' goals, targets, rewards, fun or to avoid or move 'away from' penalties, missing deadlines, or lost opportunities.

Internal/external
This meta programme describes the 'frame of reference' that an individual uses to gauge how they are performing or whether they are right. A person who is more internally referenced prefers to judge whether he/she is right from their own personally-set standards, from an 'internal' feeling or their own 'intuition', and seeks information from external sources to help form their opinion. Someone with an 'external' frame of reference will need feedback and validation from others of their achievements before they know they have done well or are right.

Options/procedures
An 'options' preference indicates being motivated by possibilities, preferring to think of ways of doing things, designing procedures and not necessarily liking following someone else's procedures. A 'procedures' preference suggests preferring to do things in an orderly, sequential or step by step manner. Once started on a course of action, someone with a 'procedures' preference will want to finish that procedure and, once given a method, will want to follow it. People with this preference may find it difficult to work out what to do if they are not given a procedure to follow and may find it difficult to deal with unstructured problems.

Proactive/reactive
'Proactive' is a preference for taking action, getting things done; at the extreme this can be without first thinking of the consequences. The opposite pattern is a 'reactive' preference which involves a liking for reflection and thinking about issues before possibly taking action.

Sameness/progress/difference
'Sameness' suggests a preference for things to stay the same, liking routine and not wanting changes. 'Progress' is between the two extremes of 'sameness' and 'difference'. 'Progress' refers to

a fondness for things to gradually change, in increments, a preference for ongoing improvement, evolutionary changes. 'Difference' suggests a liking for lots of variety, for things to be changing, in a revolutionary way. People with a 'difference' preference are likely to get bored easily and may dislike routine ways of doing things.

Past/present/future
This pattern describes the time frame in which an individual prefers to focus his/her attention. A 'future' preference indicates wanting to look ahead, think about and plan the future. Someone who focuses on the 'past' likes to look back, to reminisce, whilst a person with a 'present' preference is mainly interested in the here and now, what is happening at this moment.

People/places/activities/knowledge/things
A 'people' preference indicates a liking for spending time with and interacting with people. 'Places' refers to a partiality for places, including one's immediate surroundings, enjoying visiting places, a concern for where one lives and/or works with a sense of connection with locality and a liking for spending time at home. 'Knowledge' refers to a liking for information, obtained from, for example, reading and visiting libraries. Individuals who exhibit a preference for 'things' like to work with machines and systems and may be interested in gadgets such as cars.

Seeing/hearing/sensing
This meta programme refers to sensory system preferences. 'Seeing' suggests a liking for visual information, for example in the form of diagrams or mind maps. People with a preference for 'seeing' may prefer visual internal processing which involves use of pictures inside one's head for learning and recalling information, and use of more visual language. Visual processing is fast processing and can result in fast speech and a relatively detached unemotional approach. 'Hearing' refers to liking sounds, for example, listening to people's voices and the qualities of their voice, such as tone and pitch, and to music. Students with this preference like to learn from sitting in lectures listening to the lecturer, videos or audiotapes rather than reading. A preference for 'sensing' or 'kinaesthetic' processing suggests liking movement, feelings and emotions, enjoying taking notes and incorporating movement into the learning process.

Meta programmes are context specific, are affected by our state, and some meta programmes can be changed. For a more comprehensive explanation of meta programmes and NLP, see, for example, James & Woodsmall (1988), Charvet (1997), Woodsmall & Woodsmall (1998), Brown (2002), Brown (2003*a*) and Brown (2003*b*).

Once meta programmes are identified for an individual, because for a given context they indicate habitual behaviours, they can potentially be changed. For example, this may be possible by first making individuals aware of the meta programme patterns they run and showing/teaching them alternative behaviours that would be more resourceful in that context. There are also specific techniques that can be used to change an individual's meta programmes (James & Woodsmall 1988; Bodenhamer & Hall 1997).

Extensive research has been carried out on factors that may influence student performance, focusing on characteristics of students including motivation, cognitive style and self-concept. The issue of what motivates students – the desire to pass examinations ('extrinsic motivation'), an interest in learning ('intrinsic motivation'), the need for success ('achievement motivation') and the need to socialise ('social') has been linked to study strategies (Entwistle 1981; Entwistle & Waterston 1985; Entwistle 1987). Houle (1961) identified three motivational styles: 'goal-oriented' learners, who use education to accomplish clear-cut objectives, 'activity-oriented' learners, who participate in education for the purpose of social contact, and 'learning-oriented' learners, who participate for the purpose of acquiring knowledge.

Cassidy and Eachus (2000), who studied the relationship between students' assessment of their own academic proficiency (perceived proficiency), learning style, academic locus of control, academic self-efficacy and academic achievement, found perceived proficiency to be positively correlated with academic performance and a strategic learning approach and negatively correlated with a surface learning approach. They also found academic achievement to be positively correlated with a strategic learning approach and negatively correlated with an apathetic learning approach. It is possible that there is commonality between 'goal-oriented' learners (Houle 1961), 'strategic learning approach' (Cassidy & Eachus 2000), and students who are primarily motivated 'towards' achieving targets or outcomes. Furthermore, there is a theoretical link between 'social'

(Entwistle 1981), 'activity-oriented' learners (Houle 1961) and students with a 'people' preference and between 'learning-oriented' learners and students with a 'knowledge' preference.

Laurillard (1979) and Elton (1988) focused on the impact that teachers can have on student motivation and whether there is a link between academic performance and self-concept with, for example, Muijs (1997), finding that academic achievement was causally predominant over academic self-concept and that global self esteem was not a significant predictor of achievement. Gallagher (1996) studied the relationship between coping and objective outcomes by considering the coping patterns of different personalities. Students completed the Eysenck Personality Inventory in order to assess their levels of 'extroversion/introversion' and 'emotional stability/neuroticism'. Gallagher's findings suggest that there are linkages among personality, coping and objective life outcomes.

Wankowski (1991) identified several factors that contribute to academic success or failure in higher education. Some of these factors appear related to a student's personality, for example, 'personal confidence', 'emotional stability or instability', temperamental tendency towards 'introversion' or 'extroversion' and 'relative independence from or dependence on teachers'. Wankowski emphasised the need to nurture in students those elements that contribute to academic achievement and that are to an extent controllable amongst these, such as feelings of 'personal confidence' (potentially linking to the concept of 'self-concept' discussed by Muijs (1997)) and 'independence from academic staff'. In theory, students with high self confidence, and with relative independence from teachers may have a preference for the meta programme 'internal' whilst students who prefer 'external' are likely to appear more dependent on the lecturer requiring more reassurance and feedback. Owen and Sweeney (2002) undertook an exploratory study of students' 'ambiguity tolerance' in assignments and its effect on performance, learning and satisfaction.

The current study explores whether students' perceived personality traits, as measured by meta programmes, impact on their performance in summative assessments. One of the factors that meta programmes potentially identify is what authors such as Entwistle (1981) refer to as 'intrinsic motivation': for example, 'proactive/reactive' identifies whether they prefer to take action, to work (or not), whilst 'towards/away from' indicates whether they are more motivated by targets and rewards (towards) or by penalties and deadlines (away from). 'Options/procedures' identifies whether a student is motivated by possibilities, likes designing ways to do things (options), whereas a 'procedures' preference would be exhibited by a liking for following a step by step approach to complete a task. These meta programmes may therefore impact on performance.

Armstrong (2000) explored the possible influence of cognitive style, as measured by the Cognitive Style Index (Allinson & Hayes 1996), on performance of certain tasks in management education, using the cognitive style construct 'intuitive-analytic', which is also referred to as 'wholist-analytic'. He refers to two cognitive styles which are thought of as 'bi-polar' in nature, and focused on 'intuitive-analytic'. This parallels with meta programmes which are essentially bi-polar, with a range of behaviours possible between the two extremes. An individual may exhibit certain behaviours in one context and different behaviours in another context. Running one extreme of a meta programme behaviour pattern may be totally appropriate in a particular context (for example, a highly 'procedures' approach is necessary when routinely driving a car, whereas a more 'options' approach is necessary when attempting to solve unstructured problems, or coming up with new designs). This study explores whether students' meta programmes are associated with assessment performance, whether having particular meta programme preferences has a positive or negative effect on assessment performance.

In a review of the literature, Armstrong (1999) identified 54 dimensions on which cognitive style has been differentiated. This is an interesting quantity as it is similar to the number of meta programmes (51) that have been identified (Bodenhamer & Hall 1997). Some authors (for example, Zelniker 1989) have argued that this high number of constructs reflects the complexity of cognition, whereas other authors argue that the 54 represent different conceptions of a superordinate dimension (for example, Rayner & Riding 1997) and that there is therefore a group of principal cognitive styles (field dependence – field independence, reflective – impulsive, serialist – holist, converger – diverger, simultaneous – successive,

wholist – analytic, leveller – sharpener). Armstrong later suggested that these were defined by Riding & Douglas (1993), as a 'principal cognitive style group' which they labelled 'wholist-analytic', or 'intuitive-analytic'. Armstrong then describes the following behaviours:

Analytic
'In a work context, analytic individuals tend to be compliant, their thinking relies on logical sequences and vertical reasoning, they prefer structured approaches to decision-making, apply systematic methods of investigation, and are especially comfortable when handling problems requiring a step-by-step solution.'

Wholist/intuitive
'Wholist/intuitive individuals, on the other hand, would tend to be nonconformist, their thinking relies on impulsive synthesis and lateral reasoning, they prefer rapid, open-ended approaches to decision-making, they rely on random methods of exploration and work best on problems favouring a holistic approach.' (Armstrong 2000: 324-325)

There is consistency between the 'analytic' and 'wholist' cited above, and the behaviours of an individual with a 'procedures' and 'options' preference respectively. Also, the idea of a 'holistic approach' suggests some consistency with behaviour of an individual with a 'general' preference. It is therefore theoretically possible that some characteristics of the meta programme preferences 'general' and 'options' are similar to 'wholist' whilst the meta programme preference 'procedures' may serve as a measure of 'analytic'.

A key finding of Armstrong (2000) was that individuals who had 'analytic' as their dominant cognitive style performed significantly better on tasks which required an 'analytic' approach (tasks which required detailed and comprehensive data collection, evaluation and analysis) than those students with 'wholist' as their dominant style. What was surprising was that the 'analytic' individuals also performed better on a task (related to business policy and strategy formulation) which would be assumed to be better suited to the 'wholist' preference. Armstrong (2000) also found that students whose preference was 'analytic' achieved significantly better overall performance in business and management studies than students with a 'wholist' preference. This creates a potential dilemma as key managerial processes in practice require a more 'wholist' approach whereas it is the students with a more 'analytic' approach who may be more likely to get better degree classifications.

Riding and Staley (1998) studied the link between students' self-perception as learner, cognitive style and course performance, focusing on business studies students. In this study, students' cognitive style was assessed by means of Cognitive Styles Analysis, and performance was obtained from the students' module assessment scores. This work measures cognitive style using two basic dimensions: the 'wholist-analytic style', where an individual tends to process information in wholes or parts, and the 'verbal-imagery style' which focuses on how an individual represents information during thinking – either verbally or in mental images. They argue that these 'styles' 'probably have a physiological basis and are fairly fixed for an individual.' This contrasts with meta programmes where it has been suggested that the patterns can be changed (James & Woodsmall 1988; Bodenhamer & Hall 1997). A key part of education is to enable individuals to achieve their full potential, which may be aided by informing students of their meta programme patterns and the potential for changing them.

Riding and Staley (1998) assessed the cognitive style dimensions using the computer-presented 'Cognitive Styles Analysis' (Riding 1991). The cognitive style dimensions are assessed on the basis of response times to a series of statements that students have to identify as true or false and identification of whether a series of shapes are similar or different. The students themselves do not directly decide their own characteristics, their characteristics are a function of how long they take to respond. Each cognitive style dimension is a continuum (Riding & Staley 1998), as is the case with meta programmes.

Riding and Douglas (1993) used two cognitive style dimensions, 'verbal-imagery' and 'wholist-analytic' [measured using Cognitive Styles Analysis (Riding 1991)] to study the effect of different ways of presenting learning outcomes on learning performance. Two presentation methods (referred to as 'presentation conditions') were tested: text-plus-text and text-plus-picture. They found that the 'verbal-imagery' cognitive style and the 'presentation condition' interacted in their effect on overall learning performance. Not surprisingly, in the 'text-plus-picture' condition, the 'imagers' were superior whereas the 'verbalisers'

performed better in the 'text-plus-text' condition. In the context of meta programmes, the 'hearing' and 'seeing' meta programmes may be associated with the 'verbal-imagery' cognitive style and a preference for 'hearing' or 'seeing' may impact on assessment performance.

Riding (1996: 2) makes an important distinction between cognitive styles and intelligence or ability:

> The basic distinction between them is that performance on all tasks will improve as ability increases, whereas the effect of (cognitive) style on performance for an individual will either be positive or negative depending on the nature of the task. It follows from this that for an individual at one end of the (cognitive) style dimension, a task of a type they find difficult will be found easier by someone at the other end of the dimension, and vice versa.

In summary, there are a number of parallels which can be drawn from the cognitive styles literature and applied to the study of meta programmes. There are also important differences: meta programmes are acknowledged to be context specific and state specific (Bodenhamer & Hall 1997) whilst certain meta programmes may be 'driver' programmes, which would be exhibited by an individual in all contexts. Also meta programmes are identifiable from an individual's language and behaviour and can be changed.

Aims

The aim of this paper is to assess whether there are any links between meta programme patterns and performance in summative assessments and therefore whether meta programmes could be used as a predictor of performance. Also, meta programmes provide a potentially richer basis for measuring an individual's personality characteristics than relying on a single bi-polar measure such 'wholist/analytic'.

The nature of module content could suit students with particular meta programme preferences and therefore also impact on their performance. Modules such as HO103 'People and Organisations' are more 'people orientated' and therefore it is hypothesised that students displaying a 'people' preference would achieve a higher performance on this module. To assess consistency with Armstrong's findings (2000), it is hypothesised that students with high scores for 'procedures' would achieve higher marks on subjects that require a more 'procedural', step by step approach, than students who have a high score for 'options' or 'general'. Since the 'hearing' and 'seeing' meta programmes may be associated with the 'verbal-imagery' cognitive style (Riding & Douglas 1993), a preference for 'hearing' or 'seeing' may impact on assessment performance.

Method

Accurate and comprehensive elicitation of an individual's meta programmes is a highly skilled task which is very time-consuming. It is possible for a highly trained individual to identify an individual's meta programmes in conversation with that person or, alternatively, to use a semi-structured interview using the Language and Behaviour (LAB) profile (Charvet 1997). Both of these methods involve significant training and expertise, and are very time-consuming to implement. Therefore a pilot study (Brown 2002) was completed in order to identify an alternative method that could be practically and economically implemented in the context of education. This study established the validity of a questionnaire, the Motivation Profile Questionnaire (MPQ), which was developed by Arthur and Engel (2000) and employed in other research into communication and motivation (Miller & Deere 2000). This was achieved by identifying the meta programmes of a sample group using two methods – the LAB profile and the MPQ. The results of the MPQ were broadly consistent with the findings of the LAB profile, making it possible to identify the main meta programme patterns. Consequently the MPQ was adopted for this research.

As part of the Business School's induction programme students were introduced to the basic ideas of NLP and its potential benefits, and to the idea of meta programmes. Students were provided with instructions on how to complete the questionnaire and interpret the results before they volunteered to complete it. In a series of workshop sessions during the students' first year of study further explanation of meta programmes was provided and initial findings of the study were explained to the students. The approach taken in the workshops was to make clear to students that NLP and the MPQ offer an opportunity to raise awareness of their own personality traits as measured by the questionnaire; there being no

Module	Assessment	Nature of module content
FR101 Accounting Records	Computer-based tests and coursework case study	Preparation of manual and computerised accounts for a sole trader, together with basic accounting principles
FR102 Company Reporting	Case study based assignment plus examination	Preparation of computerised accounts for a company. Accounting concepts and conventions. Analysis of financial statements
AM107 Introduction to Management Accounting	Essay-based coursework plus examination	Understanding and application of management accounting techniques. Introduction to computer based simulations in a decision making context
AM106 Information Systems for Accountants	Computer-based test plus coursework in the form of a report dealing with application of information technology	Use of Excel for modelling and problem solving, Word for word-processing, Access to build a database. Disc and file management, computer networking
AM108 Financial Environment	Assignment in form of group-based oral presentation plus examination	Macro economic and financial environment and its impact on businesses, for example, interest rates, stock market efficiency
SR113 Quantitative Methods for Accountants	Coursework plus examination	Use and appreciation of statistics in accounting and business. Application of quantitative methods to business problems
LC129 Business Law	2000-word coursework plus examination	Theoretical principles and practical aspects of business law
LC119 Company Law	2000-word coursework plus examination	Working and practical knowledge of different forms of business medium and a private company and the operation of legal rules in this area
DM101 Introduction to the Macro Economy	Computer-based interactive tests plus examination	Identification of key economic variables, application of analytical techniques to business decisions in the macro economic context. Evaluate theories and evidence surrounding macro economic problems
DM102 Introduction to the Micro Economy	Computer-based interactive tests plus examination	Evaluate and analyse fundamental economic theories and problems across the micro economic environment
DM103 Managing Business Information	Case study based assignment plus examination comprising multiple choice and traditional style questions	Quantitative approach to problem definition and solution. Use of spreadsheets for presentation and statistical analysis. Statistical techniques including estimation, hypothesis testing
AF135 Business Financial Statements	Examinations comprising multiple choice questions and short-form questions	Preparation, understanding and interpretation of financial statements
AM104 Introduction to Management Accounting	Examinations comprising multiple choice questions and short-form questions	Preparation, analysis and interpretation of business information using management accounting techniques
HO101 Essentials of Contemporary Business Practice	100% coursework including use of software, oral presentations, written work and group-based work	Self reflection, presentation skills, information search and analysis, communication skills and use of ICT
HO102 Managing Contemporary Business Practice	100% coursework including use of software, oral presentations, written/narrative work and group-based work	Introduction to databases, design of management information systems. Development of design and creativity skills. Group working skills and management of group dynamics
HO103 People and Organisations	Coursework essay plus examination comprising 3 essays	Sociological and psychological concepts and theories applied to human behaviour in work organisations
PR106 Power, Politics and Business	1500-word coursework essay plus examination	Key concepts of power and authority in politics and business. Role of power and authority in the decision making process
BN101 Marketing Fundamentals	1500-word essay-based coursework plus examination	Role of marketing in diverse industrial and market sectors. Strategic and tactical importance of the marketing mix. Marketing plans. Internal marketing

Table 2: Module descriptions

'right' or 'wrong' answers. The objective was to increase students' understanding of themselves and to provide an opportunity for reflection, which is an important skill developed as an integral part of their degree programmes. The workshops were conducted by the researcher, who is fully qualified as an NLP Master Practitioner and Trainer to train people in all aspects of NLP, and the research project was approved by the School Ethics Committee.

The MPQ identifies nine of the total of fifty one meta programme patterns that have been identified (Bodenhamer & Hall 1997). A questionnaire-based instrument that could identify all fifty-one meta programmes is not available at the present time.

The questionnaire elicits meta programmes by requiring the subject to identify, from listed common behaviour patterns that individuals exhibit, the patterns that are applicable to him/her. The results are therefore dependent on the student's ability to identify the behaviours that he/she exhibits. For each meta programme pattern there are nine behaviours listed and the student can choose from zero to nine of those behaviours as appropriate, so a score from zero to nine can result for each pattern.

A total of 213 year one undergraduates, out of a total of 298, completed the questionnaire. In order to obtain significant numbers of students attempting the same modules, the sample was selected from students on all the year one undergraduate programmes within a university business school.

The students in the sample studied five modules in each of two fifteen-week semesters. They completed summative assessments, comprising varying forms of coursework completed during the course and examinations at the end of each semester.

The students' overall grade in each module has been used as the basis for comparison with meta programme scores. Since the meta programme scores, which can be from zero to nine, are non-parametric in nature, Spearman's Rank Correlation was used to measure the degree of association between the meta programme scores and the scores achieved by students in their summative assessments.

Meta Programme	Accounting		Other Business		t test results	
	Mean	SD	Mean	SD	t	p
Seeing	4.95	1.84	4.80	2.01	0.05	0.61
Hearing	4.96	1.58	4.58	1.72	1.48	0.13
Sensing	3.24	1.73	3.15	1.74	0.34	0.73
People	6.40	2.22	6.28	1.92	0.39	0.69
Places	4.74	1.98	3.42	1.91	4.50	0.00 *
Activity	3.38	1.91	3.23	1.80	0.53	0.59
Knowledge	2.62	1.52	1.92	1.54	3.04	0.00 *
Things	2.53	1.51	2.33	1.63	0.80	0.42
Away from	3.27	1.73	3.35	1.83	-0.30	0.76
Towards	6.17	1.59	5.90	1.76	1.04	0.29
Internal	6.17	1.66	5.69	1.78	1.82	0.06
External	4.54	1.83	4.34	1.74	0.76	0.44
Options	5.85	1.96	5.81	2.06	0.13	0.89
Procedures	4.29	2.09	3.61	2.11	2.12	0.03 *
Proactive	6.48	2.24	6.50	1.97	-0.06	0.95
Reactive	3.88	2.06	3.28	2.19	1.85	0.06
Sameness	2.80	1.37	2.54	1.52	1.17	0.24
Progress	4.69	1.86	4.16	1.93	1.83	0.06
Difference	3.04	1.90	3.41	1.90	-1.26	0.20
General	4.69	2.08	4.58	2.04	0.33	0.73
Detail	5.48	2.03	5.01	1.97	1.56	0.11
Past	4.93	2.24	4.66	2.14	0.75	0.45
Present	4.25	2.11	3.90	1.95	1.16	0.24
Future	3.85	2.07	3.20	2.21	1.97	0.04 *
* significant at 5%						

Table 3: Means and standard deviations for meta programme scores for accounting and finance students and other business school students

Meta programme	FR101 (n=57)	FR102 (n=59)	AM107 (n=55)	AM106 (n=59)	AM108 (n=53)	DM102 (n=55)	SR113 (n=55)	HO103 (n=55)	LC129 (n=56)	LC119 (n=50)
Seeing										
Hearing										
Sensing										
People	-0.33**	-0.38***	-0.38***		-0.36***	-0.39***	-0.33**			-0.36***
Places					-0.29**			0.35***		
Activity										
Knowledge										-0.24*
Things									-0.27**	
Away from										
Towards		-0.23*								-0.40***
Internal										
External										
Options	-0.23*			-0.27**		-0.24*	-0.25*			
Procedures						0.34***	0.37***		0.23*	
Proactive										
Reactive										
Sameness										
Progress					-0.27**					
Difference					0.24*					
General										
Detail										
Past										
Present		-0.29**				-0.26*				
Future										
* significant at 10% level. ** significant at 5% level. *** significant at 1% level										

Table 4: Modules attempted by Accounting and Finance students

Meta programme	FR101 (n=57)	FR102 (n=59)	AM107 (n=55)	AM106 (n=59)	AM108 (n=53)	DM102 (n=55)	SR113 (n=55)	HO103 (n=55)	LC129 (n=56)	LC119 (n=50)
Meta programmes with significant positive correlations										
Procedures						0.34***	0.37***		0.23*	
Difference					0.24*					
Meta programmes with significant negative correlations										
People	-0.33**	-0.38***	-0.38***		-0.36***	-0.39***	-0.33**			-0.36***
Knowledge										-0.24*
Things									-0.27**	
Towards		-0.23*								-0.40***
Options	-0.23*			-0.27**		-0.24*	-0.25*			
Progress					-0.27**					
Present		-0.29**				-0.26*				
Meta programmes with significant positive and negative correlations										
Places					-0.29**			0.35***		
* significant at 10% level. ** significant at 5% level. *** significant at 1% level										

Table 5: Modules attempted by accounting and finance students – grouped into positive and negative correlations

Results

The modules are taken by varying groups of students depending on their particular degree scheme. Two of the modules, DM102 Introduction to the Micro Economy and HO103 People and Organisations, are common to both accounting and finance students and other business school students. Other modules, particularly in the case of accounting and finance, are specific to one scheme. Therefore, the results below are split into two categories – accounting and finance only and

other business school students to give some scope for comparability and contrast.

Table 3 shows the means and standard deviations for meta programme scores for accounting students and other business students.

The differences between 'places', 'knowledge', 'procedures', and 'future' are significant at the 5% level. In all cases the mean for the accounting students is higher than for the other business students. The higher 'places' score suggests more concern amongst the accounting students for location, for their home, whilst the higher score for 'knowledge' suggests that the accounting students have a stronger preference for learning new things, for reading books. 'Procedures' indicates a liking for carrying out tasks in a step by step way, an approach that is relevant for accounts preparation and the compliance side of accounting, and 'future' indicates a focus on what will happen in the future, which is relevant when planning. This suggests that students with different meta programme preferences may be attracted to doing an accounting degree compared with doing a business degree.

These results show a significant negative correlation between 'people' and seven of the modules studied by the accounting and finance students and, unexpectedly, no significant correlation for H0103 People and Organisations. The results strongly indicate that a preference for 'people' could be an indicator of students doing less well in their assessments.

The other meta programme that appears for several of the modules is 'options' and the opposite to this which is 'procedures'. An 'options' preference is negatively correlated with the assessment score for four modules – DM102 Introduction to the Micro Economy, SR113 Quantitative Methods for Accountants, FR101 Accounting Records and AM106 Information Systems for Accountants – whilst, consistent with this, the 'procedures' score is positively correlated with the assessment score of two of these modules – DM102 Introduction to the Micro Economy and SR113 Quantitative Methods for Accountants. There is also a significant positive correlation for 'procedures' on LC129 Company Law. This could indicate that students who like to follow procedures do better in the assessment in certain modules, whereas those with an 'options' preference – who prefer to design procedures and don't necessarily like following procedures – do less well in level 1

Meta programme	DM101 (n=104)	DM102 (n=136)	DM103 (n=119)	AF135 (n=142)	AM104 (n=106)	HO101 (n=144)	HO102 (n=129)	HO103 (n=119)	PR106 (n=112)	BN101 (n=105)
Seeing	0.16*				0.16*					
Hearing										
Sensing	0.23**				0.17*				0.19**	
People			0.15*			0.25***				
Places	0.18*	0.16*	0.15*			0.15*	0.20**			
Activity	0.23**									
Knowledge										
Things										
Away from										
Towards				-0.16*						
Internal										
External		0.15*			0.16*					
Options									0.20**	
Procedures										
Proactive	0.17*						0.16*			0.25***
Reactive			-0.16*			-0.10***	-0.15*			-0.30***
Sameness	-0.20**								-0.15*	
Progress		0.15*	0.15*							
Difference									0.17*	
General										
Detail							0.19**			
Past										
Present							-0.20**			
Future	0.16*				0.18*		0.23***			
* significant at 10% level. ** significant at 5% level. *** significant at 1% level										

Table 6: Modules attempted by other business school students

assessments. There is some intuitive sense to the above results since the modules for which there is either a significant negative correlation for 'options' or a significant positive correlation for 'procedures' tend to be more prescriptive and involve learning established 'procedures' (DM102 Introduction to the Micro Economy – fundamental economic theories, SR113 Quantitative Methods for Accountants – statistical and quantitative methods, FR101 Accounting Records – preparation of accounts, AM106 Information Systems for Accountants – use of Excel, Word and Access, LC129 Business Law – principles and practice of business law). It is perhaps surprising that there was no significant correlation for 'options' or 'procedures' on FR102 Company Reporting and LC119 Company Law as they are similar in nature. The score for 'procedures' may be an indicator of performance on modules that have a strong emphasis on a step by step approach. These results are consistent with the findings of Armstrong (2000) who finds that individuals with 'analytic' as their dominant style perform better than students with a 'wholist' preference, and supports the suggestion that the meta programme 'options/procedures' has some commonality with the cognitive style 'wholist/analytic'.

The other significant correlations seem to occur more randomly. 'Difference' has a positive correlation on AM108 Financial Environment whilst the related pattern 'progress' has a negative correlation on the same module. For 'towards', there is a negative correlation on FR102 Company Reporting and LC119 Company Law, which is inconsistent with the findings of Cassidy and Eachus (2000) who found academic achievement to be positively correlated with a strategic learning approach. 'Present' has a negative correlation on FR102 Company Reporting and DM102 Introduction to the Micro Economy. A focus on the present may indicate difficulty in looking ahead and planning, but it is difficult to see why this should be linked to adverse performance in these particular modules and not other modules. There is a negative correlation on 'places' for AM108 Financial Environment and a positive correlation on 'places' for HO103 People and Organisations. These correlations could be related to extraneous factors. For example, the extent to which students' and lecturers' meta programmes are compatible has an impact on whether students like a lecturer (Brown 2003*a*)-and may therefore affect their performance.

'Seeing' is a preference for visual images and diagrams rather than 'hearing' (listening to sounds) or 'sensing' (a preference for movement, touch, feelings and emotions). For the other business school students, there is a weak positive correlation between 'seeing' and assessment score for two modules – DM101 Introduction to the Macro Economy and AM104 Introduction to Management Accounting. This suggests possible

Meta programme	DM101 (n=104)	DM102 (n=136)	DM103 (n=119)	AF135 (n=142)	AM104 (n=106)	HO101 (n=144)	HO102 (n=129)	HO103 (n=119)	PR106 (n=112)	BN101 (n=105)
Meta programmes with significant positive correlations										
Seeing	0.16*				0.16*					
Sensing	0.23**				0.17*				0.19**	
People			0.15*			0.25***				
Places	0.18*	0.16*	0.15*			0.15*	0.20**			
Activity	0.23**									
External		0.15*			0.16*					
Options									0.20**	
Proactive	0.17*						0.16*			0.25***
Progress		0.15*	0.15*							
Difference									0.17*	
Detail							0.19**			
Future	0.16*				0.18*		0.23***			
Meta programmes with significant negative correlations										
Towards				-0.16*						
Reactive			-0.16*			-0.10***	-0.15*			-0.30***
Sameness	-0.20**								-0.15*	
Present							-0.20**			
* significant at 10% level. ** significant at 5% level. *** significant at 1% level										

Table 7: Modules attempted by other business school students with meta programmes – grouped into positive and negative correlations

consistency with the findings of Riding and Douglas (1993) for 'verbal-imagery', though there was no significant correlation for 'hearing'. There is also a positive correlation between 'sensing' and three modules – DM101 Introduction to the Macro Economy, AM104 Introduction to Management Accounting and PR106 Power, Politics and Business (None of the sensory preference meta programmes were significant for the accounting and finance students). An interesting point is that two modules for which 'seeing' and 'sensing' are significant, DM101 Introduction to the Macro Economy and AM104 Introduction to Management Accounting, were both taught using software packages for a significant part of the course; the students work through screen-based text and examples, under the supervision of the lecturer. This method was not used with the accounting students.

There is a significant positive correlation between 'people' and the assessment score on two modules – DM103 Managing Business Information and HO101 Essentials of Contemporary Business Practice – but not as hypothesised on HO103 People and Organisations. This is interesting since it contrasts with negative correlation between the 'people' score for accounting and finance students on seven modules and there was no significant difference between the 'people' scores of the two student groups. A possible explanation in the case of HO101 Essentials of Contemporary Business Practice is that the module includes group work and development of self awareness as well as a need for development of communication and presentation skills; this may suit students with a 'people' preference who may be more 'extrovert'. In contrast DM103 Managing Business Information, for which 'people' was also positively correlated with performance, is centred on use of statistical and quantitative methods.

There is a positive correlation between 'places' and five module scores including DM101 Introduction to the Macro Economy, DM102 Introduction to the Micro Economy, DM103 Managing Business Information, HO101 Essentials of Contemporary Business Practice and HO102 Managing Contemporary Business Practice. For the accounting and finance students there was a positive correlation between 'places' and HO103 People and Organisations and a negative correlation between 'places' and AM108 Financial Environment. It is interesting that 'places' has significant correlations on several subjects; further work is needed to identify the possible reasons for a preference for one's location or home, being linked to performance in modules where there is no obvious link with 'places'.

There is a significant positive correlation for 'proactive' on three modules – DM101 Introduction to the Macro Economy, HO102 Managing Contemporary Business Practice and BN101 Marketing Fundamentals – whilst there is a negative correlation for the related pattern 'reactive' on four modules – DM103 Managing Business Information, HO101 Essentials of Contemporary Business Practice, HO102 Managing Contemporary Business Practice and BN101 Marketing Fundamentals. This suggests that students who prefer to take action (have a 'proactive' preference) rather than reflect (a 'reactive' preference) tended to do better on five of the ten modules. There is some intuitive sense in this for the two modules HO101 Essentials of Contemporary Business Practice and HO102 Managing Contemporary Business Practice as they both place more emphasis on the students taking action and learning to manage their own studies. Also, HO103 People and Organisations employs 'self-paced' flexible learning booklets which may work better for students who prefer to take action on their own initiative – which would be reflected in a 'proactive' preference. It is worthy of note that there were no significant correlations for 'proactive' or 'reactive' for the accounting and finance students and that 'proactive' is only significant on some of the business modules. This suggests that the impact of this meta programme on assessment results varies according to the module being studied, and therefore may not be consistent with 'intrinsic motivation' (Entwistle 1981).

There is a negative correlation between 'sameness' and DM101 Introduction to the Macro Economy and a positive correlation between 'progress' and two modules – DM102 Introduction to the Micro Economy and DM103 Managing Business Information. This suggests that students who do not like change may find some subjects more difficult, whilst students who prefer 'progress' – some evolutionary change, find certain subjects easier. There was a negative correlation for 'sameness' and a positive correlation for 'difference' on PR106 Power, Politics and Business. This makes sense intuitively since the content of this module contrasts with that of the other modules in the study.

There was a negative correlation for 'present' and a positive correlation for 'future' on HO102 Managing Contemporary Business Practice. This suggests that students who prefer to focus on the present, the here and now, do less well whilst those who focus on the future and are therefore more likely to be good at planning, do better in this module. This is consistent with the nature of the module which emphasises the need for students to manage their own time and work. There is also a positive correlation between 'future' and assessment scores on DM101 Introduction to Macroeconomics and AM104 Introduction to Management Accounting. This makes sense intuitively in relation to the accounting module as it does involve coverage of budgeting which is future orientated, but there were no equivalent results for the accounting students. There is a negative correlation between 'towards' (a liking for working towards goals, targets and potential lack of awareness of pitfalls) and AF135 Business Financial Statements, which could suggest a dislike, on the part of 'towards' motivated students, of the more cautious nature of accounting (consistent with the accounting students' negative correlation on FR102 Company Reporting), though there was no significant correlation for the other accounting module taken by the business students, AM104 Introduction to Management Accounting.

There are no significant correlations for 'procedures' and assessment scores for the business students and only one significant correlation on 'options'. This contrasts with these meta programme patterns having significant correlations on several modules for the accounting students; the accounting students having a significantly higher 'procedures' score than the other business students.

DM102 Introduction to the Micro Economy and HO103 People and Organisations are studied by both groups of students. For both modules, there were no significant correlations on the same meta programme for the two groups. Also, SR113 Quantitative Methods for Accountants and DM103 Managing Business Information cover similar material – statistical and quantitative methods and again there are no meta programmes that have the same significant correlations. This suggests, not surprisingly, that the two groups of students may have different meta programme

Meta programme	Accounting and Finance	Other Business School Students	Accounting and Finance	Other Business School Students
	DM102 (n=55)	DM102 (n=136)	HO103 (n=55)	HO103 (n=119)
Seeing				
Hearing				
Sensing				
People	-0.39***			
Places		0.16*	0.35***	
Activity				
Knowledge				
Things				
Away from				
Towards				
Internal				
External		0.15*		
Options	-0.24*			
Procedures	0.34***			
Proactive				
Reactive				
Sameness				
Progress		0.15*		
Difference				
General				
Detail				
Past				
Present	-0.26*			
Future				

* significant at 10% level. ** significant at 5% level. *** significant at 1% level

Table 8: Comparison of correlations between Accounting and Finance and Business Students for Module DM102 Introduction to the Micro Economy and HO103 People and Organisations

preferences, as evidenced by several significant differences between their mean meta programme scores, as shown in Table 3.

Two variables that could not be controlled were the method of assessment used in each module, since these are defined in the course documentation, and the teaching approach used for each module.

Conclusion

The findings of this study suggest that there are strong associations between students' meta programme patterns and their performance in summative assessments. Some meta programme patterns were significantly negatively correlated with performance in summative assessments whilst others were positively correlated. This suggests that meta programmes may, in some cases, act as a predictor of performance in summative assessments. If students were made more aware of their meta programmes, particularly those patterns that appear to have an adverse effect on their performance, and the alternative patterns that are possible, they may be able to modify their behaviour and therefore improve their performance. This could then lead to improvement in self concept (Muijs 1997).

Accounting and finance students with a strong 'people' preference appear to do less well in a number of subjects. It may be beneficial to possibly change the teaching method and, if possible, the method of assessment used to make the course more accessible to students with this preference. For example, more emphasis could be placed on people-centred learning and assessment methods such as group work and class discussion. This may be particularly important in the first year of the course: making the course more accessible, so these students are more naturally suited to the course, could improve retention.

For the other business students, a 'people' preference was associated with better performance. There could be scope for catering for students who do not have a high 'people' preference as they may find it more difficult to perform well in group-based assignments.

The accounting and finance students' 'procedures' score, possibly linked to 'analytic' (Armstrong 2000) was associated with better performance on some modules suggesting that either these modules or the assessment for these modules might favour a more 'procedural' approach in students or it may reflect the preference of the lecturers who taught the modules and set and marked the assessments. A raised awareness of this preference and its alternative, 'options', may assist students with a low 'procedures' score to improve their performance.

The positive correlation between 'proactive' and assessment score and the negative correlation for 'reactive' against assessment performance suggests that, for certain subjects in the business degrees, students may perform better if they were encouraged to be more 'proactive' and take action and get things done, rather than reflecting on things. This is counter-intuitive to the notion that a key part of academic study is to be 'reactive', to reflect on theories and issues.

The negative correlation between 'sameness' and assessment score together with the positive correlation for 'progress' and 'difference' against assessment score suggests that students with a high 'sameness' preference would benefit from being assisted in learning to deal with change, change being fundamental to the nature of the business world.

The questionnaire requires students to be aware of their own personality traits and therefore the results are dependent on the student's ability to identify the behaviours that he/she exhibits. The questionnaire was chosen as it facilitated contact with a large number of students which has made it possible to gauge the personality characteristics of students studying different disciplines.

Scope for further research

A natural progression is to explore whether gaining a raised awareness and understanding of their preferred meta programme patterns and the potential for changing them could enable students to improve their performance. For example, students could be made aware of the pattern 'options' and 'procedures' and how one of these patterns of working is more appropriate in some contexts or subjects and not others. Also of relevance is a clarification of the impact, from a student viewpoint, of meta programmes on their learning experience which would include investigating the meta programmes which had signifi-

cant correlations, for example, 'people', 'places', 'options' and 'procedures'.

This research is based on students in their first year of study so only considers modules that develop level 1 skills and the overall assessment results. An interesting study would be to investigate student performance in different forms of assessment used and the relationship between meta programmes and student performance in level 2 and level 3 modules, particularly for more theoretical subjects.

Another area to research is the meta programme patterns of students studying other disciplines and further investigation is needed into the parallels which can be drawn between cognitive styles and 'ambiguity tolerance' and meta programmes.

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Paper 4

Brown, N. (2004) What Makes a Good Educator? The Relevance of Meta Programmes. *Assessment & Evaluation in Higher Education*. 29 (5), pp. 515-533.

Primary research:

4 students interviewed, 22 students took part in focus groups.

Contributions to knowledge

- Meta programmes found to impact on accounting students' perceptions of their accounting lecturers. This included cases where:
    - students had different meta programme preferences from the teacher: even when 'hygiene factors' were met, this left the student dissatisfied.
    - a match of meta programmes contributed to a perception of high quality teaching on the part of the student. This appeared sufficient to outweigh the need for basic 'hygiene factors' to be met.

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What makes a good educator? The relevance of meta programmes

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This paper reports the results of a qualitative study which explores the relevance of meta programmes to students' perceptions of teaching quality. Meta programmes are a model of personality preferences from the discipline of Neuro Linguistic Programming (NLP). Research into teaching effectiveness indicates that students rate as important 'hygiene factors' such as the teacher's 'knowledge of the subject' as well as less tangible qualities including 'ability to communicate' and 'student–teacher rapport'. This study reveals the need for similar qualities but, in some cases, presence of these 'hygiene factors' was insufficient; students cited other factors related to personality. Some students were found to like the approach of certain teachers whilst other students rated the same teachers less favourably. When questioned as to why, factors emerged that relate to the distinct teaching style adopted by these teachers that appeared to suit particular students and not others. This study suggests that a teacher's meta programmes influence the approaches adopted in their teaching and these styles suit students with matching meta programme preferences. Where students have different meta programme preferences from the teacher, then, even where the 'hygiene factors' are met, this leaves the student dissatisfied. There is potential for teachers to adopt teaching approaches more appropriate for the meta programme profiles of their students. Also, on the part of the students, an increased awareness of their meta programme preferences offers the potential to improve their learning experience.

Introduction

A teacher delivers a class to a group of students. Some students respond very positively to the teacher whilst other students respond less favourably: why does this happen? This study explores one possible explanation for this apparent inconsistency—the language and behaviour of the teacher as perceived by the student. A teacher's language and behaviour will match the language and behaviour preferences of some students and not others. Meta programmes are personality preferences that influence, at an *unconscious* level, an individual's language and behaviour. A mismatch of meta programme preferences therefore makes communication more difficult. Raising teachers' awareness of the impact of a mismatch of meta programmes and strategies to ameliorate that effect have the potential to improve the quality of teaching and learning.

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Meta programmes lie within the field of Neuro Linguistic Programming (NLP), which has its roots in cognitive psychology and linguistics. Earlier studies have established the nature of meta programmes (Woodsmall, 1988; Bailey, 1991; Woodsmall & Woodsmall, 1998; Beddoes-Jones, 1999) and methods of identifying meta programme patterns through semi-structured interview (Godin & Sirois, 1995; Godin, 1997) or questionnaire (Arthur & Engel, 2000; Brown, 2002). Miller and Deere (2000) examined the relevance of meta programmes to motivation whilst Kearsley (1996) used meta programmes to aid understanding of sales reluctance.

Teaching quality is commonly assessed using student feedback questionnaires (for example, Zhongqi, 2000), the reliability of which is questionable (Tatro, 1995; Worthington, 2002). Anther study (Kember & Wong, 2000) used interviews to identify students' perceptions of teaching quality. Criteria associated with good teaching include generic 'hygiene factors' that are relatively easy to measure, such as 'knowledge of the subject' and 'being organized'. Less tangible characteristics such as personality of the teacher tend only to be addressed in questionnaires using items related to factors such as 'teacher–student rapport' (Forrester-Jones, 2003).

This study used interviews and focus groups to identify what students perceive as the essentials of a good teacher. The interview and focus group transcriptions were analysed to identify 'hygiene factors' and also issues relating to the personality preferences of the teachers. Some students expressed a preference for teachers with similar dominant meta programme preferences to themselves whilst other students with different dominant meta programmes were critical of the same teachers.

The aim of the paper is to report students' perceptions concerning teaching in a university department (business school). The purpose is to indicate the relevance of meta programmes to the perceptions that students form of their teachers, with the findings suggesting that a match or mismatch of meta programme preferences can have a significant impact on those perceptions. This casts doubt on the validity of using students' perceptions to assess teaching quality and raises the possibility of improving teaching effectiveness by raising teachers' awareness of meta programme patterns in students and their impact for effective learning.

Literature review

NLP and meta programmes

NLP has been defined as 'an extraordinarily complex model of human cognition and behaviour and of how to identify behavioural and communication patterns' (Dowlen, 1996, p. 31). Alternatively, Georges (1996) refers to NLP as an 'advanced communication model'. NLP is therefore, among other things, a practical model of communication which provides us with a way of thinking about people and the process of communication, and which provides the 'tools to identify the structure of successful communication in education, therapy, management, health and elsewhere' (De Luynes, 1995, p. 34).

Meta programme preferences, which have been well documented (Charvet, 1997; Woodsmall & Woodsmall, 1998; Beddoes-Jones, 1999), affect, at an *unconscious* level, the language and behaviour patterns of individuals. They are defined as: 'one

Table 1. Illustrations of meta programme behaviours

Pattern	*Illustrations of behaviours*
Visual	People who exhibit a 'visual' preference may: • use 'visual' language: words such as focus or clarity • be fast thought processors • talk quickly and adopt an upright posture
Auditory	An 'auditory' preference is indicated by: • language that reflects the qualities of sound, such as tone and pitch • liking to learn by listening • sensitivity to characteristics of speech: tone of voice and rhythm
Kinaesthetic	An individual with a liking for 'kinaesthetic' may: • use 'kinaesthetic' language: get to grips with or grasp. • like to learn by movement: writing, highlighting text, doodling or fidgeting • tend to talk more slowly, breathe more deeply than for a 'visual' preference
Detail	A 'detail' preference may be indicated by: • a tendency to think inductively, 'chunking up' from specifics to abstract concepts • preferring to receive and disseminate information in small chunks • a tendency towards perfectionism
General	People who prefer to use the 'general' mode may: • reason deductively from global concept and 'chunking down' to specific details • want less information, like to get an overview or general impression of a topic • can become impatient if anyone tries to give them too much detail
Options	Individuals with an 'options' preference: • are motivated by options/possibilities • want to find alternative ways to do things • like to create procedures and systems, but may have great difficulty following those procedures • like to break the rules
Procedures	A person with a 'procedures' preference: • may be motivated to follow a step by step approach • likes to keep to the rules and do things the right way • is more interested in ***how*** to do things rather than ***why*** do them • will, once a procedure has been started, want to finish it • may feel lost or stuck without a procedure

of the internal programmes or filters that we unconsciously use in determining what we pay attention to, and are one of the basic building blocks that make up our personality' (James & Woodsmall, 1988, p. 92). A preference for a meta programme category is evident in the different language and behavioural preferences that an individual displays, as illustrated in Table 1.

It is important to appreciate that: 'meta programmes are not personality types, they are ways of processing information and communicating in the moment' (Lawley, 1997, p. 7). Meta programmes, also referred to as 'thinking styles' (Bed-

does-Jones, 1999), determine the form or structure of our thinking, *how* we think, and they exist at a level that is above, or 'meta' to, our thinking itself, *what* we consciously think (Hall & Belnap, 1999). Meta programmes are preferences and are changeable—'we often move through the full range of each of the categories of the meta programmes as we go through our day' (James & Woodsmall, 1988, p. 97).

Meta programmes are described as existing on a continuum between two extremes. An individual may have a preference for thinking that is at one extreme of the continuum or that is a combination of the two preferences. Meta programmes may be context-specific with, for example, an individual having one preference in a work context and a different preference in a social context. Alternatively, if an individual has a preference at one extreme of this continuum this preferred pattern may be referred to as a 'dominant' or 'driver' meta programme as it will have a significant effect on the thinking and behaviour of that individual (Hall & Belnap, 1999).

Previous research has established different methods of identifying meta programme preferences, including semi-structured interviews (Godin & Sirois, 1995; Godin, 1997) and a questionnaire (Arthur & Engel, 2000; Miller & Deere, 2000; Brown, 2002, 2003).

A major theme of NLP is to enhance individuals' understanding of themselves and others, particularly their communication preferences and what motivates them. This represents a potentially powerful tool for teachers to use in improving their understanding of themselves and their students. If people have similar dominant meta programmes and therefore exhibit similar language patterns, a deep rapport will develop, whereas if these language patterns are not aligned people will find it more difficult to understand each other (Lawley, 1997). An awareness of these patterns may therefore contribute to the teacher's ability to communicate with students and therefore to students being more or less successful in their studies.

For teachers to develop their professionalism, it is important for them to reflect on their teaching (Eraut, 1993; Elton, 1996; Biggs, 2003) and to be able to see things from different viewpoints or perspectives, particularly the perspective of the students. Perspective is an important skill of communication and analysis. Perspectives are referred to in NLP as 'first position' which is one's own reality, 'second position', another's reality, and 'third position' which is in essence a third party, relatively objective, systematic overview (Craft, 2001). The ability to understand the perspective of 'second position' is an important skill for a teacher to possess so that he or she is able to appreciate the viewpoint of the learner. The adoption of 'third position' is relevant when reflecting on the teaching process. An understanding of meta programmes can assist the teacher to achieve this 'second position' for students, particularly those students with different meta programme preferences to themselves.

Communication theory

The communication process may be thought of as: 'one or more people coming to a given piece of information, each with his own needs and intentions, each

comprehending and using the information in his own way. Therefore communication is based on a relationship which may be between two persons, or between one person and many' (Schramm, 1971, p. 13). It is this idea of each person comprehending information in his or her own way that is significant. The teacher comprehends information in a way that is a function of his or her meta programmes and this will influence the ease with which that communication can be understood by the students, who may have different meta programmes. Hovland, Janis and Kelley (1953, p. 12) provide a useful definition of communication: 'the process by which an individual (the communicator) transmits stimuli (usually verbal) to modify the behaviour of other individuals (the audience)'. This idea of modifying the behaviour of other individuals is consistent with the process of learning, which may be viewed as 'seeing something in a different way' or 'changing as a person' (Marton *et al.*, 1993).

The essence of the relationship between two or more people communicating with each other is that they are 'in tune' with each other, focusing on the same information. A teacher and a student are obviously in a social relationship that will in some way colour any communication between them (Schramm, 1971). This 'rapport' with another person is established by matching or pacing the style of communication of that person. This is achievable by matching their verbal and non-verbal behaviour by using 'the same words, phrases, expressions, tone, pace and other paralinguistic aspects of their language' (De Luynes, 1995, p. 36). This can encompass feeding back to a person language that reflects their meta programme preferences, which enhances rapport at an *unconscious* level. It is clearly possible to achieve this at the level of communication with individuals. The challenge is whether it can be achieved at a group level by identifying the meta programme preferences of the group and reflecting those preferences in communicating with the group.

Meta programmes and communication

If a teacher has a different meta programme preference to a student, the teacher's encoding of communications to the student is likely to be carried out in a different language style from the language preference of the student. This will create 'noise', making it difficult for the student to decode and interpret the message. Hence the 'message', which is unlikely to be perfect when the sender encodes it, is likely to deteriorate further before it is decoded and interpreted by the receiver (Schramm, 1971).

In interpreting the message sent by the teacher, the student attempts to attach meaning to the message. Meaning is a cognitive and emotional phenomenon; it exists within participants in the communication process, it is the response a receiver makes to the signs that embody the message. Meaning is 'connotative as well as denotative—the response of the whole personality to a set of signs' (Schramm, 1971, p. 30). The similarity of meaning which two people will attribute to a message depends on finding an area where the experience of the two people is sufficiently similar that they can share the same signs efficiently.

The proposition is that if there is similarity between the meta programmes of the student and the educator this will increase the ease with which meaning is conveyed. For example, as noted by De Luynes (1995, p. 39): 'it has long been of interest to note the strong "kinaesthetic" bias in the representations often made by many staff who work with children with emotional and behavioural difficulties ("EBD children") and the apparently greater difficulty many "visually" biased teachers have when working with EBD children'. 'Visual' and 'kinaesthetic' are examples of an individual's meta programme preferences (see Table 1). This case study illustrates the proposition that people will only accept messages that 'already fit their own schemas of the world' (De Luynes, 1995, p. 37) and the way meta programmes impact on how that schema is represented. A similar mismatch can occur if a teacher has a preference for a general, big picture overview of topics and likes abstract concepts. This teacher will mismatch a student who has a preference for lots of specific details; the student may feel deprived of information which he or she will need.

This paper postulates that it is necessary for the message to be communicated by the teacher in a way that is appropriate for and accessible to the student in terms of their meta programme preferences.

What makes a good educator? Students' perceptions of teaching effectiveness

Use of students' evaluation of teaching effectiveness is widely used in universities throughout the world, which raises concerns regarding reliability. The issue of reliability is significant since student satisfaction, with emphasis on quality of teaching, is viewed as an important indicator of quality (Donald & Denison, 1996). Previous research on the reliability of student evaluation of teaching identified background factors that potentially introduce bias into the students' ratings, such as how student evaluations are administered and characteristics of the course being studied (Wachtel, 1998; Worthington, 2002).

Characteristics of students

The characteristics of students that have been examined include the role of expected grade, students' perception of the purpose of the teaching evaluation system, gender, culture and age (for example, Tatro, 1995; Anderson & Siegfried, 1997; Prosser & Trigwell, 1999; Worthington, 2002; Chen & Hoshower, 2003). Koermer and Petelle (1991) found that the relationship between students' communication expectations and their actual experience of teachers' communicative behaviour has an impact on students' evaluations. The student's personal or social view of the teacher can be argued to have an impact on the students' ratings of the teacher regardless of the level of teaching effectiveness (Shevlin *et al.*, 2000). Barnett (1985) and Shevlin *et al.* (2000) examined the relationship between teaching/learning styles and personality of students, using the Eysenck Personality Questionnaire, Junior (Eysenck & Eysenck, 1975). However, the focus was on teaching methods, such as dictation and use of games and simulation, rather than on the style adopted by the teacher as a result of their personality preferences.

Entwhistle and Tait (1990) found that, not surprisingly, students are more likely to describe teaching that assists their chosen learning style as 'effective teaching'. Riding and Staley (1998) assessed students' perception of the teacher's style, with an emphasis on learning style whilst Kember and Wong (2000) focused on students' conceptions of learning and students' perceptions of good or poor teaching, with emphasis on students' beliefs about the teaching approach of the lecturer rather than about their personality preferences.

Characteristics of teachers

A large number of factors relating to the characteristics of instructors have been proposed and tested, assessing such issues as gender, minority status, physical appearance and reputation of the teacher (Tatro, 1995; Anderson & Siegfried, 1997; Wachtel, 1998; Worthington, 2002). There are a number of qualities or 'hygiene factors' that one would expect a good educator to have, such as 'knowledge of the subject', and there have been many attempts to classify those qualities (for example, Ramsden, 1991; Reeders & Marshall, 1996; Husbands, 1998; Patrick & Smart, 1998). A survey of Australian students revealed that students perceive the ability of a teacher to present materials in an interesting way (ranked fourth) and to provide clear explanations (ranked first) as important qualities of a teacher (Fisher *et al.*, 1998). These two criteria were also adopted in a study of why students enjoy some lectures and dislike others (Zhongqi, 2000).

Previous research on effective communication of teachers, reviewed by Sensenbaugh (1995) focused on characteristics such as 'teaching immediacy' (verbal and non-verbal communication such as smiles, head nods, use of inclusive language and eye contact), finding that the students can experience increased motivation if taught by highly immediate instructors (Frymier, 1993). Other studies have focused on the impact that teachers can have on student motivation (Laurillard, 1979; Elton, 1988). Communication skills were also rated as an important part of what represents good teaching by Reeders and Marshall (1996), Willcoxson (1998) and Fisher (2001). One of the criteria listed by Elton (1996) as a requirement for teaching competence is 'empathy with students'. To enhance this 'empathy' it is important for teachers to communicate at a level of understanding that is close enough to that of the student for them to be able to follow what is being said (Elton, 2003) rather than at the teacher's own level of understanding, and to organize classes in such a way as to address the individual needs of students (Isaacs, 1994). McDowell (1993) found that 50% of graduate teaching assistants felt that the personality of the teacher and interpersonal relationships with students played a significant role in their teaching.

Attempts have been made to assess the effectiveness of teaching by including measures of the 'quality' of the relationship between the students and the teachers. Lowman and Mathie (1993) and Forrester-Jones (2003) include the criterion 'interpersonal rapport' between the teacher and the student whilst Brown and Atkins (1993) include 'stimulating'. Students like to enjoy lectures and, when students were asked about lectures, boring lectures were found to be the main focus of student

complaint (Zhongqi, 2000). A mismatch or match of meta programmes between the lecturer and student could affect whether the student perceives the lecture as boring or not.

Teachers tend to teach in ways that suit their own learning styles and motivation needs (Elton, 2003). Willcoxson (1998) studied the relationship between the way teachers like to learn and the way they like to teach and why they choose the teaching strategies they adopt in lectures. Teachers whose teaching was praised by students themselves preferred learning in groups and seem to 'pay more attention to the interpersonal or emotional dimensions of teaching and learning' (Willcoxson, 1998, p. 65). Teachers who preferred learning through solitary reading, research or similar independent activity described their lectures as being monologues and their students often found them to be difficult to engage with and follow (Willcoxson, 1998). Huibregtse, Korthagen and Wubbels (1994) found a relationship between the type of understanding that teachers aim to develop when they are learning something for themselves and when teaching.

To date, identification of personality of teachers has utilized measures of personality traits such as 'extraversion' and its relationship with classroom teaching behaviours and teaching effectiveness (Rushton *et al.*, 1987). Kourilsky, Esfandiari and Wittrock (1996) focused on the relationship between 'generative teaching' and personality characteristics such as 'social maturity', 'ability to incorporate criticism' and 'receptivity to criticism' and the impact on the effectiveness of teachers. Teachout (2001) used the Vocational Preference Inventory to measure occupational personality types, the My Vocational Situation to measure levels of identity and the Survey of Teaching Effectiveness to measure teaching effectiveness, and found that 'none of the personality types and none of Holland's constructs was found to significantly contribute to the overall variance of teaching effectiveness' (p. 179). Cooper (2001), who utilized the Myers-Briggs Types Indicator, found that the preferred teaching activities of foreign language teachers usually matched their personality dimensions. It will be interesting to assess whether there is a similar link between teaching style and meta programme preferences.

This study is not attempting to arrive at a comprehensive definition of what is good teaching, rather it is exploring the contribution an understanding of personality preferences, as measured by meta programmes, can make to improving our appreciation of the communication process between teacher and student. This goes beyond the level of basic teaching competence. An awareness of students' meta programme preferences has the potential to lift a teacher's performance by enabling him or her to be more flexible in approach and therefore more acceptable to individual students, which can contribute to achievement of teaching excellence.

Method

In view of the desire to identify whether students' perceptions were influenced by their meta programme preferences, a qualitative approach was adopted, employing focus groups and interviews facilitated in a relatively unstructured way to initiate discussion (Bogdan & Biklen, 1992). In view of the need for language analysis, each

meeting was recorded and the transcriptions produced were analysed. Focus groups have been used in educational research in the USA to gain insights into the student experience (Palmer, 1994) and the applicability of focus groups to educational research has also been studied in the UK (Ottewill & Brown, 1999). Focus groups were selected to reduce the 'opportunity for a controlled presentation of personal views' (Sarantakos, 1998, p. 180) and to provide an environment in which the students could freely express their views (Cohen *et al.*, 2000).

Depending on the preference of the students, participants took part in a focus group or interview which were conducted by the researcher who is qualified as an NLP Master Practitioner and Trainer to train people in all aspects of NLP. Care was taken to establish the perception of the interviewer as an impartial researcher and an assurance given regarding the use of comments for research purposes only. The research project was approved by the Business School Ethics Committee. All staff included in the research project and students who took part in the focus groups and interviews did so voluntarily. Of the 69 students in the cohort, four were interviewed individually and 22 attended focus groups. The meta programmes of staff and students were identified as part of a separate research project.

Preliminary findings

'Hygiene factors'

When the interview transcriptions were analysed, there were, not surprisingly, several examples of 'hygiene factors', criteria which may be viewed as necessary for basic teaching competence. For example, when asked what aspects of the course were outstanding, some students cited knowledge of the subject:

> Student 15: ... and of course they've got to know about the subject.
>
> Student 17: ... the quality of the staff, their expertise...

A further example of a 'hygiene factor' is possession of a sense of humour (Elton, 1996):

> Student 7: ... he (Teacher 7) just makes it fun.
>
> Student 13: I like it when particular teachers have a bit of a joke and change the subject a bit.

Other comments referred to the preference for teachers to work at the pace or level of the students, not the pace of the teacher. This links to Elton's (2003) point about teaching at the students' level and not the teacher's level:

> Student 7: I like to see it as a group all working through at a pace that we go by, not as you go by as a teacher.
>
> Student 18: ...just being able to talk to them and not feel that they're higher than you, you've got to be able to talk to them.

The idea of being 'on the same level' is strongly linked to 'approachability' and communication, which arose when asked for the essentials of a good teacher:

> Student 17: Approachable, so that if I have any questions I feel I can go to them and ask on a one to one...
>
> Student 18: Communication mainly, being able to feel that you can go and talk to them as well and not get your head bitten off if you ask a question over and over again.

This 'approachability' may be relatively obvious or at a more subtle level, as revealed by the following student's comment on how to judge whether a teacher is 'approachable':

> Student 17: ... you can pick up on small signs; the way they answer questions in lectures and tutorials, whether they look at you as though you're slowing them down or interrupting. Some teachers welcome you to ask questions and you can tell.

Some students suggested that 'hygiene factors' such as 'friendliness' or 'approachability' may not be enough, for example:

> Student 3: A particular teacher I think we're thinking about (teacher 18). He's very friendly. He is friendly but his lectures and his tutorials are boring.

'Approachability' may be linked to a willingness to answer questions. This was mentioned by several students when asked about what makes some teachers good relative to others:

> Student 25: ... willing to answer questions, willing to teach. Not many teachers are, they just finish their job as soon as possible.
>
> Student 23: ...they are more willing to answer questions or they are more willing to say more clearly, to explain many times on the same topic.

However, just being prepared to answer questions may not be sufficient. The *way* in which those questions are answered is significant, for example in a way that is supportive to the student or that is flexible enough to match the needs of the student:

> Student 7: That when we say something she (lecturer 10) tries to make it so we're actually right, but she puts things in to it saying you could put it this way or that way.
>
> Student 25: ...and try to understand what the students don't understand is important. I think teacher 1 is quite a good teacher, but if she would try to understand what we don't understand and ask what it is we don't understand and try to say it several times in different ways. I find some teachers, even though we ask the same questions he just repeats what he thinks, he just repeats and repeats in one lesson, there is no explanation at all, so he really can't explain to us or teach us in a different way.
>
> Student 23: ... the teaching method, use the whiteboard or whatever to teach the same thing would be more interesting or have a different view on one thing is important. It will make us understand more...

This liking for variety is consistent with students who prefer active learning (Kember & Wong, 2000).

Communication was mentioned by several students, in particular the ability to communicate with individuals rather than just at a group level:

> Student 7: ...communication for each pupil, not just for the class.

> Student 8: I think communication is a big issue. They have to be with the individuals, not as a group.
>
> Student 1: I think it also helps if more personal like they are actually reaching you rather than just speaking at you, to you.
>
> Student 3: Speaking on the same level isn't it? Some people seem to speak on the same level.

The question is what would increase students' perception that they are being 'reached' or spoken to on the 'same level'. There was evidence of the relevance of 'personality', which can have a significant effect on the extent to which the student engages with the subject:

> Student 15: I suppose it's to do with whether you like them (teachers) really. I suppose with people you don't like, you tend to avoid talking to, that's the way I do it anyway; if you don't like them I tend not to go and ask them. I think their personality has got to make a difference.

If this student does not like a teacher he may not even talk to him or her, and yet that teacher may be very competent. The student was then asked what sort of personality he likes:

> Student 15: ... a bubbly personality; someone who makes it enjoyable rather than just sits there and writes, someone who talks to you and gets you involved. That's the type of teacher I like.

Clearly personality is a factor impacting on the teacher–student relationship that requires more analysis, and meta programmes may assist with that analysis.

Meta programmes

Some of the students' comments relate to the particular approach adopted by the teacher, which may or may not suit the individual student. This approach or style will be influenced by the meta programme preferences of the teacher. The comments cited emerged prior to any mention of meta programmes in the interview or focus group.

One student acknowledged that the teacher was a good teacher and yet did not like his style:

> Student 16: ... I think that he (teacher 8) teaches very well but **I think the style is not my style.** I think because this year he teaches subject 1 and I belong to his group for the Tutorial, but I moved to teacher 12's tutorial and I compare the two. I think teacher 12's approach to the question is very clear, but when I moved to teacher 8's class it's very messy.

This student appears to have moved between tutorial groups because of a mismatch of style. The like or dislike for the teacher may link to the student's dominant meta programmes, which was identified as 'detail' (see Table 1 for description). One of teacher 12's dominant meta programmes is also 'detail' whilst teacher 8 does not have a 'detail' preference.

It may be possible for teacher 8, whose style she doesn't like, to better meet the needs of this student by adopting a more flexible approach to his teaching, for example to match her 'detail' preference. Another example of a mismatch of style that appears to be related to meta programmes:

> Student 17: **The style I don't like and others do** is for example teacher 12. In his lectures and tutorials he is very structured and very formal, you know he's going to be prepared, he's got perfect slides and will answer every question, but I always feel that another group wouldn't be any different. Whereas teacher 15 and teacher 21 have more spontaneous styles ... I enjoy that more; I think this is a more useful learning experience. I find it boring and think I could print this off Blackboard and understand everything, whereas if I missed teacher 15's or teacher 21's and teacher 7's I like, if I didn't go to those I feel I might have missed something important, so I like that rather than the more structured.

In this case student 17 states that the teacher satisfies various 'hygiene factors'—'structured', 'prepared' and 'perfect slides'—whereas that is insufficient, the student still wants more than this, for example a 'spontaneous style'; the teacher is perhaps too organized for this student! Student 17 is suggesting he doesn't like the use of 'set notes', doesn't like teacher 12's approach which is 'very structured and very formal', which appears to be a function of the teacher's preference for 'procedures'.

Student 17 also mentions that if he missed the lectures of teachers 15, 7 or 21 he might 'miss something important'. These latter comments imply a preference for 'away from' motivation, being encouraged to go to the lectures of the latter three teachers because of fear of missing something rather than 'towards' motivation which would focus on what he might gain from the lectures. A relevant issue is that this student has a strong preference for 'away from' and for 'general' (which is opposite to the 'detail' preference of lecturer 12).

Some of the students' comments revealed a preference for the 'difference' meta programme:

> Student 25: ... he really can't explain to us or teach us in a different way.

> Student 23: ... to teach the same thing would be more interesting or have a different view on one thing is important. It will make us understand more ...

Both students express a desire for different ways of communicating to match their need for 'difference'—both students have a high 'difference' preference. Student 17 also revealed a liking for more 'difference' than is being provided by teacher 12's approach when he states that 'another group wouldn't be any different'.

The following student refers to a dislike for the subject taught by teacher 12:

> Student 8: ... there is too much detail.

What is interesting here is that teacher 12 has strong 'detail' and 'procedures' preferences, whilst student 8 has a lower preference for 'detail' and a strong preference for 'options' and doesn't like the subject. In contrast, other students like teacher 12's approach:

> Student 26: I prefer listening to teacher 12's lecture and tutorial, he is clear and easy to follow.

> Student 25: Teacher 12 speaks more clearly.
>
> Student 16: Teacher 12, different tutors have got different teaching styles but I come from China and in my country all the tutors do is give you the principle and give you the example and if you follow them you can do all the questions and I think that teacher 12 has this kind of style and I can get used to it. Teacher 12 is always very organized; step one, step two and if you follow it you can understand everything and you can do anything.

In describing teacher 12, above, student 16 is referring to the 'procedures' nature of his approach ('step one, step two ...'). This student raises the interesting issue that culture could have a significant impact on meta programme preferences. (Also, 'hearing' appears to be a high preference amongst the students from Hong Kong and China). A preference for a 'step by step approach' suggests the student may also have a passive conception of learning and view teaching as transmission of knowledge (Kember & Wong, 2000).

In contrast with student 8, student 16 has an extremely strong preference for 'detail' which perhaps explains her liking for this teacher's approach.

Another student appeared to like the predictability of teacher 12:

> Student 7: I like the lectures the way that teacher 12 and teacher 18 do them, it's different; we can take our own notes and we don't have to look up, we're listening to it.

Here is another example of different students having contrasting opinions of the same teacher:

> Student 16: ... last year I didn't think Teacher 10 gave me much help. The lectures were only about 20 or 30 minutes and it was always 'I'll give you the lecture notes and go home and read the books, that's enough' but sometimes I can't understand the book properly.

Student 16's comments appear to relate to 'hygiene factors' (the lectures being too short and perhaps inadequate explanations being provided). However, there seems to be a link with the student's strongest preference which is for 'detail' which results in a need for lots of detail, lots of information, whereas teacher 10 has a strong preference for 'general'. A 'general' preference involves a liking for an overview of a subject and can result in that person only communicating fragments of the 'big picture' view they have as an internal representation of the subject. In contrast, the following student likes this teacher:

> Student 8: Teacher 10 seems to ask us what we want to do, like the lectures; you don't always have lectures, she gives us notes in the tutorial rather than the lecture.

Student 8 and teacher 10 both have a strong 'options' preference so this liking for not always having lectures could be a reflection of the student's 'options' preference. What is significant here is that the 'hygiene factor' (where the lecture was much shorter than it should be) did not appear to be an issue for this student where there was a better match between their meta programme preferences. The following student also liked lecturer 10:

> Student 7: ... that when we say something she (lecturer 10) tries to make it so we're actually right, but she puts things in to it saying you could put it this way or that way.

The second part of this comment is important as the student highlights a preference for how the teacher says 'you could do it this way or that way'. This language reflects the 'options' preference of the student and the teacher.

Meta programme preferences also appear to have an impact on students' learning preferences, in particular whether they like lectures. Predictably, some students expressed a dislike for lectures:

> Student 2: I find the lectures boring, because you're just sitting and listening for an hour, whereas I prefer tutorials where you're left to do things and work ...

Student 2's view reflects her strong preference for taking action (as indicated by a high 'proactive' score). However, there was some support for this style of teaching. For example:

> Student 4: Sometimes I prefer to just listen. Just so you can understand it more before you actually go into doing the work.

> Student 1: It's best to be explained first about it and then shown something then you've got the chance to do it yourself.

This series of quotes highlights that students may like a teacher and rate them highly, or dislike a teacher and rate them less favourably, purely because of a match or mismatch in meta programme preferences. This rating may or may not relate to whether that teacher is competent at their job, as indicated by objective measures of performance.

Conclusion

This study suggests that 'hygiene factors', such as 'knowledge of the subject', 'sense of humour', 'approachability' and 'willingness to answer questions' were, as expected, relevant to achieving teaching competence. Other qualities that would contribute to teachers being 'highly competent' (Elton, 1996), such as the ability to teach at the same level as the students and having the flexibility to explain things in different ways, emerged as important qualities. There are examples of teachers teaching from their own meta programmes which suited some students but not others. An improved awareness of meta programmes could result in a more flexible approach.

One of the so-called 'hygiene factors' would be 'being organized', whereas the comments made suggest that not every student values this approach, some preferring a more spontaneous style.

In addition certain characteristics arose that appear to be related to the ability of teachers to communicate with students. There was evidence of the need to relate to students as individuals, not just to the group: namely, the ability to speak on the 'same level' as the individual students. Other students referred to the importance of personality. In one case liking a teacher was a prerequisite to talking to or approaching the teacher.

In other cases the issue of style, which appeared to relate to the teacher's meta programme preferences, had a major impact on students' perceptions of the teacher. If there was a mismatch of style, then, even if the teacher met the necessary 'hygiene factors', this was insufficient for some students and reduced the effectiveness of teaching for individual students. In contrast, a match of meta programmes appeared to provide a major contribution to a perception of high quality teaching on the part of the student. In one case this appeared sufficient to outweigh the need for basic 'hygiene factors' to be met. This raises issues on whether students' opinions should be relied upon for assessing teaching quality.

Hence, even where a teacher is competent, it is the students' perception of the teacher, which will be influenced by a match/mismatch of meta programme preferences, that will impact on how the students receive information and how they conduct themselves as students in relation to that subject.

Limitations of the study

The students in the sample were those who volunteered to take part and the scope for bias exists. The consequences of only including volunteers were that firstly the students who agreed to participate were those interested in finding out more about themselves and who tended to be more motivated. Also, it may have been that the students liked the course tutor who undertook the research. The study excludes comments made about the researcher because of this issue.

For the purposes of identifying the students' meta programme preferences, the study relied on the results of the Motivation Profile Questionnaire (MPQ) which has limitations, including the need for self-assessment (Brown, 2003). It was first developed in the USA and, as a consequence, some of the language and contexts used may be inappropriate for the UK. At present there are no alternative questionnaires available for use in higher education, which is potentially significant, as it is suggested that meta programmes are context-specific.

Scope for further research

A match or mismatch of the meta programmes of the teacher and the student appears to have a significant effect on how students rate the teaching they are receiving. It will be interesting to explore whether this discourages students who have different patterns to those of their teachers, which could contribute to a lack of diversity of personality preferences amongst students taking the same courses, an issue raised by Kovar, Ott and Fisher (2003).

Brown (2003) revealed that the majority of the students on a degree scheme had similar dominant meta programmes to the teachers of that discipline whilst other students had different meta programmes. Hence the group was not a homogenous set of students. Brown and Graff (2003) showed a link between students' meta programmes and their performance in summative assessments. It will be interesting to explore whether students who do less well in the degree have different meta programme preferences to those students who do well. It will also be fascinating to

explore whether raising students' awareness of their preferences, in connection with 'encouraging reflection and self awareness' (Lucas & Milford, 1999), could contribute to improving the quality of the teaching and therefore their performance, which could improve retention. This study has demonstrated the scope for using meta programmes to analyse the teacher–student relationship, providing a valuable new approach to improve teaching quality and the students' learning experience.

Notes on contributor

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Paper 5

Brown, N. (2005) Meta Programmes for Identifying Thinking Preferences and Their Impact on Accounting Students' Educational Experience.' (2005) *Journal of Accounting Education*. 23, pp. 232 – 247.

Primary research:

33 students interviewed.

Contributions to knowledge

- Identified 10 meta programmes and beliefs about intelligence (Dweck, 2000) to be influential in the specific context of students' educational experience. First time this had been done in the context of HE.
- Meta programmes found to affect the ability/inability of certain students to manage the educational process.

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Meta programmes for identifying thinking preferences and their impact on accounting students' educational experience

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Abstract

Meta programmes are a way of indicating unconscious thinking preferences that influence how a person perceives the world, and how that person behaves and communicates with others. Meta programmes provide an easily understood language that can facilitate an understanding on the part of accounting students and faculty, of metacognitive processes, an important pre-requisite to developing the skill of learning to learn. This paper reports the results of an interview-based study which identifies 11 meta programmes important to the specific context of students' educational experience. Meta programmes are found to affect the ability/inability of certain students to manage the educational process, a result that improves our understanding of why some students are better at coping with the demands of higher education than others. Since meta programmes are considered to operate at an unconscious or metacognitive level, raising awareness of their thinking and learning styles offers students the opportunity to influence, or change, their own cognitive processes involved in learning and therefore to enhance that learning. An increased understanding on the part of accounting faculty of their own and their students' meta programmes offers potential for improving communication with students and designing more effective teaching and feedback strategies.

Keywords: Learning; Motivation; Pedagogy; Thinking preferences; Metacognitive; Meta programmes

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1. Introduction

When teaching, do you sometimes find it difficult to communicate with a group of students without knowing why? Are there sometimes individuals that you are unable to relate to? This may be the influence of a mismatch of meta programmes. Meta programmes provide a new way of understanding and improving how individuals communicate, how they prefer to learn, and how they are motivated to take action. It is important to treat students as individuals (Hanno, 1999) and a fundamental way to do that is to communicate with them in a style they will best understand.

The aim of the interview-based study described in this paper was to identify the meta programmes which are particularly influential to students' educational experience. Since meta programmes are considered to be context specific, individuals may exhibit different meta programme patterns in an educational context from patterns displayed, for example, at home (Charvet, 1997).

Meta programmes, which originated within the model known as Neuro Linguistic Programming (NLP), represent an approach to describing unconscious thinking preferences which are represented in individuals' language and behaviour. Whilst the Myers-Briggs Type Indicator reports an individual's preferences on "four scales, each consisting of opposite poles" (Briggs Myers, 1993, p. 3), meta programmes are a more refined model assessing up to fifty one thinking preferences, not all of which are opposite in nature.

Meta programmes provide a language, accessible to individuals without specialised training in psychology, for understanding and enhancing metacognition. Metacognition or metacognitive skilfulness is defined by Flavell (1979, p. 232) as "one's knowledge concerning one's own cognitive processes and products or anything related to them". Metacognition is referred to as "the process of learning... what is going on inside their head" (Higgins et al., 2005, p. 45). Metacognition is fundamental to students being able to learn on their own, which is identified as the "overriding objective of accounting programs" (Accounting Education Change Commission, 1990, p. 309). It is also considered that improving metacognition should be an important pedagogical goal in its own right Gunstone (1994) or, as suggested by Yorke and Knight (2004), students should "attend to development of their own attributes" (p. 31).

A meta programme has been defined as: "a very basic organising principle in one's perceiving and thinking... they (meta programmes) address the subject of how we sort and attend to information" (Hall, 1996, p. 203). For example, the meta programme "in time"/"through time" indicates how an individual perceives time. Indicators of a strong "in time" preference would be a tendency to live for the moment, focusing on the here and now. An individual might choose to act spontaneously, when it seems the right time, and will often run over time on meetings or classes and be late for appointments. In contrast, an individual with a "through time" preference is likely to be strongly aware of the passage of time, of what happened in the past and what will likely happen in the future. This individual would be good at planning and using a diary, will tend to be early for appointments and finish meetings or lectures on time. A "through time" preference individual may find it difficult to associate into the moment, concentrate on the task at hand, or enjoy the here and now. From this illustration it can be seen that the preference for a meta programme can be an influencing factor on a student's educational experience. For example, students with an "in time" preference will find it more difficult to organise their time, with a tendency to rush their assignments or be late submitting their work.

Prior research has found that meta programmes enhance motivation and communication for baseball players (Miller & Deere, 2000). Sirois (1997) examined the influence of meta programmes on career decision making. An awareness of meta programme preferences of self and others has been found to be beneficial in enhancing team working skills (Beddoes-Jones (2003)), an important transferable skill for undergraduates to develop. Kearsley (1996) applied an understanding of meta programmes to the issue of sales reluctance amongst accounting practitioners. Studies by Godin and Sirois (1995) and Godin (1997) established the validity of the Language and Behaviour (LAB) Profile – a semi-structured interview-based instrument for identifying meta programmes in work situations.

Limited work has been undertaken on meta programmes in the accounting education environment: Brown (2003) found that accounting majors exhibited, on average, dominant meta programmes similar to accounting faculty in the same school, although the students were not a homogenous group. Meta programmes were found to be influential in explaining accounting students' performance in assessments: certain patterns were positively associated with student grade-points and other meta programmes were found to be negatively associated with grade-points (Brown & Graff, 2004).

Research by Brown (2004) suggests that meta programmes are important to students' perception of the quality of the teacher/student relationship. When there was a match between the meta programmes of the student and educator, this enhanced the relationship and therefore the quality of the teaching experience, as perceived by the student. This result is consistent with Sternberg (1997, p. 79) who states that "a match between styles ..... creates synergy". A teacher's natural tendency is to explain things in ways that match their own perceptions of how best to learn (Elton, 2003). This will make learning more difficult for students with different meta programmes from the teacher. In Brown (2004), where there was a mismatch of meta programmes, the students viewed the quality of teaching less favourably, even when "hygiene factors", such as being well organised and knowledge of the subject, were satisfied by the educator. For example, one student stated:

> "The style I don't like and others do is ... teacher 12. In his lectures and tutorials he is very structured and very formal, you know he's going to be prepared, he's got perfect slides and will answer every question, but I always feel that another group wouldn't be any different. Whereas teacher 15 and teacher 21 have more spontaneous styles ..... I enjoy that more; I think this is a more useful learning experience ... so I like that rather than the more structured ..."

This comment reflects a mismatch of meta programmes: the teacher has a strong preference for "sameness" and "procedures" whilst the student's opinion regarding the teacher's adoption of a very structured approach and comment that "another group wouldn't be any different" suggest these meta programmes contribute to a teaching approach that does not suit this student. Importantly this student also refers to the impact of this match/mismatch of styles on his learning.

If a student does not fit the stereotypical accountant's profile, as exhibited predominantly by their educators, the type of mismatch described above could serve to deter them from accounting as a discipline, an issue that has caused concern in the accounting profession (Kovar, Ott, & Fisher, 2003; Wolk & Nikolai, 1997). Students' educational experience could be improved if educators use language and design teaching materials to match the meta pro-

gramme preferences of the students in the classroom (Lawley, 1997). To do this, accounting educators would need to be aware of their students' meta programme preferences.

The following case study provides an illustration of how one educator has changed his approach to take account of differences in students' meta programme preferences.

Case study to illustrate how an understanding of meta programmes can enhance accounting teaching and learning

1. The accounting educator has a strong "detail" preference so prefers to learn inductively (implicit in the 'illustrative' approach to learning) from details to the overall concepts/framework. Some students also like this approach, whereas other students prefer to deal initially with the overall principles (the "big picture") and use "deductive logic" (Ijiri, 1983) to learn the specific details of the approach. As a consequence of awareness of the students' meta programme "detail"/"general", a broad overview of topics is included at the outset, as well as the underlying detail.
2. The same educator used to experience diculty with students who had a high "internal" and high "self" preference: these students tend not to provide any response to the educator in lectures or tutorials unless the educator says something the student does not understand or that the student disagrees with. Then the student will tend to interrupt with a question. The educator has a high "external" preference and therefore has a need for some kind of ongoing feedback in class, feedback that is not provided by students with high internal and self preferences. Raising awareness of this preference has meant the educator can recognise and adjust to the pattern.
3. The educator also has a preference for "options" which results in a liking for dealing with issues that are not necessarily part of the lecture content, but which could be related to it. Some students, particularly those who have a "procedures" preference, find this confusing so care is taken to limit the extent of straying from the main content of the lecture. A related point is that students with a "procedures" preference like to be given a procedure to follow via example, at least when they commence coverage of a topic. As students gain experience they are introduced to less structured situations and scenarios to encourage them to develop the skill of creating solutions, something which a student with an "options" preference would find much easier and more "natural".
4. At a more subtle level, the educator attempts to reflect dierent language preferences in communications with students in order to achieve a better level of rapport. This is particularly important when communicating with students individually. For example, if a student has a preference for "towards" motivation (motivation towards goals and targets) then their progress in their studies can best be discussed in terms of aiming to meet targets and the benefits that will be gained from doing well in their course. In contrast, if a student has an "away from" preference (motivated to avoid what they don't want to happen) they will respond more to deadlines and to the threat of penalties associated with doing badly.

It is possible for students to change their meta programme preferences (James & Woodsmall, 1988) by first raising awareness of their individual thinking and learning styles and of alternative patterns that may enhance their educational experience. For example, a student with a "detail" preference could be made aware of this preference and the alternative general preference, and practise general behaviour to improve their learning. The potential for this is illustrated by the following students' comments:

> Detail: "I still tend to write everything down.... I'm starting now to read through on the screen.... I see the point of it and think, right I didn't need to write that lot down." (14)
> General: "If I could visualise the whole essay before I start.... (I find it) difficult to see the whole picture." (31)

The majority of the meta programmes examined in the current study are described in Brown (2002) and Brown (2003). The "Aristotelian"/"non-Aristotelian" meta programme, which relates to how an individual prefers to perceive reality, is also included. A preference for Aristotelian is indicated by a "black/white" or "is/isn't" way of thinking. At the extreme, an individual can feel "stuck and view things as unchangeable" (Bodenhamer & Hall, 1997, p. 82). A "non-Aristotelian" view is indicated by a perception of reality as being less clear cut, with more appreciation of the "shades of grey" between "black/white".

In identifying which meta programmes should form the basis for a higher-education based questionnaire, a literature review revealed 21 meta programme patterns that appear important in general or in the work context: "towards"/"away from", "internal"/"external", "proactive"/"reactive", "options"/"procedures", "sameness"/"difference", "general"/"detail", "self"/"other", "feeling"/"choice"/"thinking", "people"/"place"/"things"/"activity"/"information", "independent"/"proximity"/"co-operative", rule structure, convincer filter, time filter, "through time"/"in time", "perfection"/"optimisation", completion filter, "self"/"others", "visual"/"auditory"/"kinaesthetic", "black-and-white"/"continuum", "Aristotelian"/"non-Aristotelian" and "why"/"how" (Cameron & Bandler, in Woodsmall (1988), James & Woodsmall (1988), Woodsmall (1988), Bailey (1991), O'Connor & Seymour (1994), Hall (1996), Jacobson (1996), Bodenhamer & Hall (1997),harvet (1997), Beddoes-Jones (1999), Garratt (1999), Hall & Belnap (1999), Dilts & DeLozier (2000) and Burns and Newton (2000)). The study reported in this paper identified 11 meta programmes important to students' educational experience.

2. Method

An individual's meta programme preferences can, with appropriate training, be reliably identified from his/her language, behaviour, and eye movements (Bailey (1991), Godin & Sirois (1995), Kearsley (1996), Godin (1997), Charvet (1997), Brown & Turnbull (2000) and Brown (2002)). Therefore a qualitative research approach, based on semi-structured interviews, was adopted to identify generic meta programmes that are potentially important to students' experience in higher education.

Meta programmes were identified as they were displayed digitally (by verbal language) and by analogue indicators (including hand, body, and eye movements). Each interview was conducted by one researcher whilst another observed and made notes on a profile sheet. Both researchers were trained in meta programme recognition. No specific questioning techniques were used for the identification of meta programmes. Video recording was

not used as it was felt to be too obtrusive and the observer was able to perform this function.

Both researchers were trained in interviewing skills and one researcher has a background in counselling. The researchers were therefore able to draw on their experience to set up the interviews within a context of establishing rapport with the student. Seating was arranged in a non-threatening manner and initial enquiries as to the student's general welfare were made in a conversational manner. This approach provided encouragement for the student to relax and therefore be more forthcoming once the interview moved to the more formal stage.

After each interview, the meta programme patterns identified by the two researchers were compared and discussed in order that a consensus profile was identified. At this stage any relevant research points were documented and issues for further inquiry identified. A further condition on whether each student's meta programme patterns were included was that there was evidence that the meta programme was influential in the context of that student's educational experience. For a meta programme to be viewed as influential there had to be a link between the identified meta programme and the way the student experienced their time at the university. It was therefore not sufficient to identify a meta programme preference which affected only a student's general thinking and behaviour.

In order not to bias the data by organising special interviews, the research was carried out using interviews that were arranged as a routine part of the students' programme of study. However, students were asked at the time of organising the interviews whether they were willing to be observed to enable their meta programmes to be assessed. The students were unaware of the model of meta programmes which avoided any bias in the findings towards identification of certain patterns; the patterns identified were those that naturally emerged during the course of the interviews.

The interviews focused on students' experience and progress on their undergraduate accounting course and their reflections on that experience. Students were asked to complete a questionnaire, which included a self-assessment of skills, prior to attending the interview to enable their responses to be reviewed jointly by the interviewer and student. The questionnaire focused on study skills, revision skills, writing skills, oral communication skills, time management, information technology, working with others, problem solving, and numeracy skills. In the interview, students were asked which skills they were concerned about and wished to discuss. The aim was to identify areas of weakness and ways in which the student could address weakness (es) after the interview. As part of the interview the student was required, with the assistance of the educator, to complete an action plan which outlined the relevant remedial action to take. As part of the questionnaire students were asked to reflect on broader issues including the question "Why do you want a degree?". This question and the student responses were discussed since it is a question often asked in employment interviews. Twenty-six accounting majors and seven interdisciplinary undergraduates were interviewed over a period of 10 weeks; none of these students had participated in earlier studies.

As the interviews were analysed, the researchers were aware of the danger of their interpretation being influenced by their own patterns, producing biased results. Turnbull and Beese (2000, p. 290) acknowledge that qualitative research can be influenced by the "individual attributes and perspectives" of the researcher. Fortunately, the researchers exhibit quite different meta programme patterns: one researcher has a strong preference for "external", "detail", "away" from and "kinaesthetic", whilst the other researcher has a dominant preference for "internal", "general", "towards" and "visual". Discussion was frequently required to ensure either researcher was not filtering through their own patterns, and to

achieve "intersubjective verification" (Rogers, 1967, p. 219; Miller, 2005, p. 20). For example, discussion was necessary in the case of interview 25 to gauge whether the student was more "internal" or "external", "towards" or "away from" and more "kinaesthetic" or "visual". Also, in making their decisions, the researchers were mindful of the need to establish the external validity (in the context of qualitative research referred to as "fittingness" (Sandelowski, 1986)) of the findings by considering their applicability to the students' educational experience.

Meta programmes were identified by reference to verbal and non-verbal language patterns displayed by students during interviews. Examples of evidence used to identify each meta programme are included in Appendix A.

As the interviews progressed, the researchers experienced difficulty distinguishing between "people"/"things" and "independent"/"proximity"/"co-operative", since these meta programme patterns overlap in terms of the preference they indicate. The latter pattern emerged, not only more frequently identifiable as a pattern, but also as more important to the student's educational experience (for example, in relation to his/her like/dislike of group work). Hence, for the purposes of the questionnaire to be developed in the next stage of the research project, the pattern "independent"/"proximity"/"co-operative" was felt to be most relevant.

In the Motivation Profile Questionnaire (MPQ), a questionnaire for identifying meta programmes, the pattern that relates to the perception of time is "past"/"present"/"future". This refers literally to an individual's preference for focusing on the past, being concerned with the present, or placing their attention on what will happen in the future. In this study, the alternative perception of time "in time"/"through time" was found to be more apparent and a potentially more appropriate way of modelling time; it reflects how time impacts on, for example, a student's ability to plan and manage their time, another important transferable skill.

3. Results

Evidence of verbal and non-verbal language patterns that indicated individual student's meta programme preferences and demonstrated the importance of the meta programme to the student's educational experience is included in Appendix A. These individual examples, whilst they cannot be generalised, represent important further confirmation that meta programmes have a major impact on a student's educational experience.

Table 1 includes the meta programme patterns that were identified as influential on students' educational experience, with results for accounting majors shown separately from the results for interdisciplinary students. Patterns are only included in Table 1 if there was a clear indicator of the pattern, as reflected in the language and/or non verbal behaviour of the students. The frequency with which each meta programme pattern was identified is also shown to provide a basic indicator of the relative importance of each pattern. A high frequency of occurrence was taken as an indicator that the meta programme had relevance to a larger number of students than where there was an infrequent occurrence. Therefore it could be that a meta programme that occurs frequently is more widely influential to students in the broader student population.

Some meta programmes emerged as being more perceptible than others. This could be because certain meta programmes are also evidenced by analogue indicators (gestures and eye movements) as well as digital (language). Also, since the interviews focused on a

Table 1
Meta programmes identified in interviews as important in higher education context

Meta programmes	Number of times meta programme identified		Total	Rank
	Accounting majors	Inter-disciplinary students		
Number of students	26	7	33	
Towards/away from	22	6	28	1
Internal/external	19	6	25	2
In time/through time	18	7	25	2
Options/procedures	15	6	21	4
Visual/auditory/kinaesthetic	16	5	21	4
Independent/proximity/co-operative	8	6	14	6
Proactive/reactive	11	1	12	7
General/detail	8	3	11	8
Sameness/difference	8	2	10	9
Aristotelian/non-Aristotelian	8	0	8	10
People/things	4	0	4	11

discussion of the individual student's progress on his/her degree course and the associated skills the course is aiming to develop, certain meta programmes were more prominent due to their importance to the student's experience. For example, students were asked why they were studying accounting, the students' answers to which provided an opportunity to identify "towards" and "away from" motivation patterns. This highlights the potential for developing a method for assessing meta programmes for the specific context of higher education, rather than relying on previously available generic questionnaires.

Some students displayed an extreme preference for one meta programme pattern, referred to as a "driver" pattern (Hall & Belnap, 1999), which had a major effect on the student's educational experience. In the case of interview 7, a strong preference for "difference" influenced experience as indicated when the student said: "*last year it was different, new, a challenge.....this year everything seems the same*". This student had become de-motivated in the current year of the accounting course due to there being insufficient variety in the course to satisfy the need for "difference". This is an example of an understanding of meta programmes that could be applied to improve a student's motivation to learn accounting, which is viewed as an important issue to accounting educators (Rebele, 2002).

Other students displayed a strong preference for more than one meta programme. This combination of dominant patterns, consistent with the concept of "profile" (Sternberg, 1997), had a major effect on the students' experience in higher education. For interview 11, the combination of strong preferences for "Aristotelian", "independent" and "internal" contributed to a very rigid mindset:

> Aristotelian: "The way I lay it out is very confusing..... I learnt it (writing) wrong in school".
> Independent: "I'm not the best of people at managing others..... I just tend to do it myself".
> Internal: "The only person I trust' (self)..... I'm right, others are wrong".

This student experienced a considerable amount of stress during the course, which adversely affected academic performance.

The potential to undertake a rigorous statistical analysis of the data was limited due to the small sample size and method of data gathering. When discussing their experiences in higher education, the two groups of students (accounting majors and inter-disciplinary students) exhibited similar meta programme patterns (Table 1). In particular, no "new" patterns were apparent in the interdisciplinary students that were not identified for the accounting majors. Sufficient breadth of meta programme patterns was displayed by the two groups of students to suggest that these patterns have applicability to students studying other disciplines.

4. Discussion

This study examined how meta programmes influence students in the higher education context. 11 of the 21 meta programmes recognised in the literature as relevant in general or in the work context were identified as specifically relevant to higher education. It is important to contextualise the identification of meta programmes in students' educational experience because meta programmes have been found to be context specific (Charvet, 1997).

There were examples of the impact of meta programme preferences on important aspects of students' self management of the educational experience. This included poor time management, as illustrated by a student who displayed an "in time" preference: "*I make plans but find time taken away by unimportant things. ...me and Mum ended up cutting out things*". Another student exhibited a "through time" preference which demonstrated good time management: "*I know my day before it starts. .... I can almost see the timescale in my head*".

Meta programmes were found to impact how students learn, including whether they prefer to work alone or with others:

> Independent: "I am more comfortable on my own. .... I do essays at home, too many distractions." (at university)
> Cooperative: "We work things out together. ..... it's easier working with them."

Another aspect of learning, a preference for deductive logic (Ijiri, 1983), was illustrated by a student with a "general" preference contrasting with a preference for "detail" which can result in collecting too much information:

> General: "I pull everyone's stuff together (group assignment)... I put myself outside the assignment... I'm the marker here." (12)
> Detail: "Sometimes I collect too much.... and go off the point." (29)

There appeared to be a difference between what was the natural meta programme preference and the pattern that had been "learned" for the education context. For example, student interviewee number 9 seemed to have learned time management strategies ("through time") while the natural inclination appeared to be "in time". This is consistent with James and Woodsmall (1988) who assert that meta programmes can be changed. As Bodenhamer and Hall (1997, p. 199) suggest: "we always have options if we know how to think about those options".

There is potential for students to learn to apply beneficial strategies from other contexts of their lives to improve their educational experience. An example is student interviewee number 8, who had difficulty becoming motivated to do college work. The student, who tended to leave things to the last minute and then complete "*whatever is due tomorrow*",

stated: "*if I'm comfortable with something I'll do it straight away*". This student could be encouraged to learn from situations when he/she has been "*comfortable with something*" and apply this understanding to the context of education. Sternberg (1997) asserts that thinking styles are teachable. Similarly, since meta programmes are a way of describing thinking styles, there is the potential that they can be taught: i.e., the students can be given the opportunity to adopt more productive patterns.

Some patterns indicate the degree of openness that an individual has to change and to taking on new and different tasks. For example, a preference for "difference" can be reflected in a desire for change: "*I don't want to do the same things.... I don't want to be stuck in a rut..... I like to do something new.... new experiences all the time*" (*22*). In contrast, a preference for "sameness" can indicate a more limited outlook: "*I always stick to the same routine... my mind is already set in one way*" (*27*). This is an important attribute since accounting educators are preparing students for a complex and rapidly changing world.

Certain interviews revealed interesting issues regarding influences on students' motivation. Several of the accounting students appear to be studying the subject because they want a good job, not because they necessarily like accountancy. They had decided, at a conscious level, to do the course for "rational" reasons. However, at an unconscious level, these students were not motivated to study accounting. This applied, for example, to student interviewee number 17, who wanted a job that would "*give me money to do what I want*" yet the student displayed low motivation and achieved poor results. It is difficult for educators to identify how to motivate such students and how to assist these students become more motivated to work hard on their degree. This contrasts with students for whom accounting is a career choice that fits with their meta programmes, such as student 18 who stated: "*Accounting is what I always wanted to do.... I wanted to work with figures... more than anything else I'd read about*" (*18*).

The individual case studies cited above and the illustrations in Appendix A provide evidence that meta programmes influence students' educational experiences.

5. Conclusions

This study aimed to identify the meta programme patterns that influence accounting students' experience in higher education. An awareness of meta programmes can be used at an individual student level to aid self awareness of metacognitive thinking processes. It can also provide accounting faculty with a working knowledge of their students' meta programme preferences. This enhanced understanding of metacognition, as well as being an important learning outcome in its own right, can help faculty design instructional materials and pedagogy to maximise individual student achievement. By reflecting meta programme preferences in teaching, faculty will be better able to match the meta programmes of more individual students. This will enhance communication with the students and potentially improve their motivation and learning effectiveness. At a personal level, a knowledge of students' meta programmes means that feedback to students can be tailored so that it is appropriate and more understandable.

There was evidence that students' educational experience is affected by their unconscious meta programme patterns. A raised self-awareness of those patterns offers the potential to improve the educational experience by enabling students to change these

patterns if they are not contributing to effective learning; for example, meta programmes that impact on students' time management.

The combination of dominant meta programme preferences had a major influence on some students' educational experience, whilst other students displayed meta programme patterns which resulted in a rigid mindset not conducive to learning. Making such students aware of how this tendency impacts their educational experience provides an opportunity to develop a more flexible mindset.

This study was based mainly on accounting majors, but there was no noticeable difference between the patterns displayed by accounting students and interdisciplinary students. The patterns "towards"/"away from", "internal"/"external", "options"/"procedures", "proactive"/"reactive", "detail"/"general", "sameness"/"difference", "in time"/"through time", "independent"/"proximity"/"co-operative", "visual"/"auditory"/"kinaesthetic" and "Aristotelian"/"non-Aristotelian" were identified as influencing students' educational experience. This is a different combination of meta programmes to the patterns on which previously available generic questionnaires are based, emphasising the need for a questionnaire that is specific to the higher education context.

Patterns identified in this study will therefore form the basis for a self assessment instrument, to be developed in the form of a questionnaire, as the next stage of this research. The questionnaire will enable students and faculty to identify and understand their meta programme patterns in an efficient manner, without the need for specialist training. Overall, this self-assessment tool has the potential to both raise student self-awareness of the unconscious factors that impact their educational experience and to help them develop an independent, more effective approach to learning.

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Appendix A

Meta programme	Verbal indicator	Interpretation
Internal	• "*I don't get the response I wanted.... I get the information I want...I make sure I understand.... I do notes in my own way.*" (26) • "*The only person I trust (himself).... I'm right, others are wrong.*" (11)	A preference for 'internal' influences the way student 26 chooses to do notes, wanting to do them his/her own way, rather than following someone else's suggestion Student 11 is very dismissive of the opinion of others, making it difficult to work with other students and with faculty

Appendix A (*continued*)

Meta programme	Verbal indicator	Interpretation
External	• "*I just sit down and do what everyone else does....he says 'jump' and I say 'how high?'*"... (15)	Interview 15 indicated a strong and potential over-reliance on other people ... this preference resulted in getting into situations that were not helpful to the student's studies – this included going out and having to wait for others to be ready to come home. The tendency to ask other students to explain things meant this student was more dependent on other students to get his/her studies done
Aristotelian	• "*The way I lay it out is very confusing... 'I learnt it wrong in school.*" (11)	This student's preference made it difficult to deal with situations where there is not a clear cut 'right' answer
Options	• "*My way of thinking is not logical...I always look for alternative solutions.... I can always find a solution.*" (33)	This student's approach is best suited to dealing with unstructured problems
Procedures	• "*I make a list before I do the essay....before I do something I always read.*" (instructions) (12)	This preference is more suitable for tackling structured problems with require a systematic approach
In time	• "*Make plans but find time taken away by unimportant things....me and mum ended up cutting out things.*" (for 4 h) (25)	Interview 25 provided a good example of how an 'in time' preference can cause problems. This was at a time when the original intention was to do some studying
Through time	• "*I know my day before it starts..... I can almost see the timescale in my head.*" (12) • "*I have never missed a deadline.... I would be lost without a diary.*" (27)[1]	[1]When discussing time, interview 12 and 27 displayed non-verbal indicators of a preference for 'through time': when speaking about time, interview 12 moved arms in front of him/her from left to right, indicating that that was how he/she perceived the movement of time, with the past on the left and the future to the right. Interview 27 also moved his/her hands in an approximate line running from left to right in front of the body – when speaking about the past, the hands were to the left and to the right when referring to future events

(*continued on next page*)

Appendix A (*continued*)

Meta programme	Verbal indicator	Interpretation
		These students demonstrate the usefulness of a 'through time' preference for handing in assignments and essays on time
Proactive	• "*I'm a more get up and go person.... I like a busy life...easy to get yourself up for assignments.*" (12)	This student preferred to take action, working hard on his/her studies
Reactive	• "*I'll do it when I get back-...when the house is empty I try to get a bit more done...*" (17)	This student tended to put off doing his studies with little motivation to take action, failing several assessments at the end of the year
Sameness	• "*I always stick to the same routine... my mind is already set in one way.*" (27)	This student's comment suggests a lack of flexibility which may make it difficult to learn news ways of thinking
Difference	• "*I don't want to do the same things.... I don't want to be stuck in a rut..... I like to do something new.... new experiences all the time.*" (22) • "*Last year was different, new, a challenge... I get bored easily.*" (7)	This student enjoyed the first year of the degree because it was different from what he/she had been doing previously. In the second year the student became de-motivated because there was a lack of difference
Towards	In response to the question: 'Why do you want a degree?' and 'Describe your reasons for choosing this degree subject': • "*Accounting is what I always wanted to do.... I wanted to work with figures... more than anything else I'd read about.*" (18)	This student was enthusiastic about the course and had a good record of attendance on the course
Away from	• "*...I'm not going to do what I did for my A levels (wait till the last 3 weeks, then revise)...I don't want to be nervous coming into the exam...I don't want to study all my life.*" (12)	This student was keen to learn and worked hard to achieve good results

Appendix A (*continued*)

Meta programme	Verbal indicator	Interpretation
Independent	• "*I am more comfortable on my own.... I do essays at home, too many distractions.*" (at college) (27) • "*I'm not the best of people at managing others... I just tend to do it myself. If I read others work I pick holes in it.*" (11)	These students prefer to work alone and found it difficult to take part in group assignments
Proximity	• "*I'd rather be in charge.*" (of a group) (29)	A preference for proximity is reflected in wanting to work with others but where each person's role is distinct
Co-operative	• "*We work things out together..... it's easier working with them.*" (25)	This student prefers to work with others which is beneficial for team working and may make it more difficult to do individual assignments
Visual	• "*I can see myself doing it.... I saw it in a whole different light... I always focus on one thing.*" (26) • "*I can see the assignment book.*" (7) • "*I can see it in my head what it means.*" (16)	Student eyes moved upwards when recalling the experience Students 7 and used a visual image to recall information
Auditory	• "*I have to listen and then I remember.*" (21) • "*If I'm thinking... I'm talking it through in my head.*" (14)	Interview 21 also exhibited non-verbal indicators – while making the above statement, his/her hands moved in a circular motion around the ear Student 14 recognises a preferred way of thinking
Kinaesthetic	• "*...got my back up.... 60% was upsetting...tend to pick holes in it dreadfully.*" (11) • "*I can't talk without my hands... I remember dance moves no problem.*" (14)	During the interview, this student fidgeted and fiddled with his watch strap. Also, the student's speech was slow with a tendency to look down frequently – eye movements can indicate what internal representations an individual is experiencing Student 14 uses a lot of movement when thinking, finding it very useful to take a stress ball into examinations

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Appendix A (*continued*)

Meta programme	Verbal indicator	Interpretation
General	• "*All in all, I want to know round a subject, not just one context, rather explore the whole thing than actually specifically pick out one point.*" (20) • "*I "look at the key things.*" (29)	
Detail	• "*(I am) not that concise with English, I don't make a point very specifically... I may go off the point.*" (11) • "*I need to get everything down.*" (30)	

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Paper 6

Brown, N. (2006) The Development of a Questionnaire Assessing Metacognitive Patterns of Students Majoring in Accounting in Higher Education. *Accounting Education: an international journal*. 15 (3), pp. 301 – 323.

Primary research:

Pilot version of new questionnaire developed and tested on 862 students, 15 students interviewed or took part in focus groups

Contributions to knowledge

- A new questionnaire was developed and pilot tested – the *Metacognitive Pattern Indicator (MPI)* - to identify *metacognitive patterns* of students in the context of HE.
    - First questionnaire that identifies meta programmes to be developed for use in the context of HE.
- Statistical analysis revealed:
    - question items for 20 of the 24 pattern variables that met the criteria for internal consistency reliability of at least 0.52 (Duff, 2001).
    - significant differences (at the 1% level) on 13 pattern variables, based on the most reliable question items.
    - conceptually opposite profiles, which made intuitive sense, represents a new theory which relates patterns together into conceptually logical profiles.

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The Development of a Questionnaire Assessing Metacognitive Patterns of Students Majoring in Accounting in Higher Education

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ABSTRACT *This paper reports on the process of developing and pilot testing a new questionnaire—the Metacognitive Pattern Indicator (MPI)—to identify metacognitive patterns of accounting students. Metacognitive patterns are a construct that encompasses meta programmes and other theoretical frameworks, the measurement of which can improve metacognition of students in higher education. The MPI was completed by a pilot sample of 207 accounting and 655 non-accounting students in a UK university. Survey-based student evaluation of the MPI indicated that students found the questionnaire to be easily accessible, confirming it can be completed and the results interpreted without any need for specialist training. Follow-up interviews with 15 students indicate that the MPI increased metacognitive awareness and improved understanding of factors that impact on students' learning. Statistical analysis revealed alpha coefficients greater than 0.7 for seven pattern variables and greater than 0.52 for a further 13 of the 24 variables, confirming that further research is needed to improve reliability. Exploratory factor analysis, based on the more reliable scale items, revealed conceptually logical combinations or 'profiles' of patterns. Some interesting statistically significant ($P < 0.01$) differences were identified between metacognitive pattern scores of accounting students and other groups of students.*

KEY WORDS: Meta programmes, metacognition, self-awareness, questionnaire testing, metacognitive pattern indicator

Introduction

There is always a need for ways to assist accounting educators to 'improve the learning process' (Rebele *et al.*, 1998, p. 198). Extensive work has been done to explore the contribution that can be made from an understanding of learning styles, approaches to learning and personality traits. The current study focuses on the development

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of a questionnaire—the *Metacognitive Pattern Indicator (MPI)*—that attempts to identify metacognitive patterns. *Metacognitive patterns* are unconscious thinking or sorting preferences that influence students' behaviour at a level above (or 'meta' to) conscious awareness. The concept of *metacognitive patterns* encompasses meta programmes (Charvet, 1997; Brown, 2002, 2003, 2004), and other theoretical frameworks, in particular beliefs about intelligence (Dweck, 2000).[1]

Since *metacognitive patterns* directly influence thinking, motivation and communication, they are important aspects of accounting students' 'personal competencies' (i.e. competencies that they should attain prior to starting work) (AICPA, 1999). In raising students' awareness of their individual *metacognitive patterns*, the *MPI* offers the potential to improve metacognition and improve students' competence in learning to learn, a key concern for accounting educators (Kelly *et al.*, 1999).

The researcher, as a trained accountant working in a UK business school, has a particular interest in developing this instrument so it can be of benefit to accounting educators and accounting students. Given that accounting educators are often faced with teaching students who are majoring in other disciplines, it is important to be aware not only of the characteristics of accounting students but also how they might compare with the patterns of students of other disciplines.

Literature Review

An important aim of accounting education is to produce graduates who 'have learned how to learn and are capable of continuously adapting themselves ...' (Kelly *et al.*, 1999, p. 321). The term metacognition refers to 'higher order thinking which involves active control over the cognitive processes engaged in learning' (Livingston, 1997). This ability to take active control over thinking processes is viewed as crucial to the skill of 'learning to learn' (Learning Working Group, 2005). Gunstone (1994) argued that enhanced metacognition should be a learning outcome in its own right. By improving metacognition, the *MPI* can play a major role in improving students' skill of learning to learn.

Meta programmes[2] are a concept that emerged in development of the model of Neuro Linguistic Programming (NLP), the origin of which is documented in Bandler and Grinder (1975) and Grinder and Bandler (1976). Meta programmes are well-documented (Woodsmall, 1988; James and Woodsmall, 1988; Bodenhamer and Hall, 1997). Charvet (1997, p. 11) defines meta programmes as:

> Specific filters we use to interact with the world. They edit and shape what we allow to come in from the outside world. They also mould what comes from inside ourselves as we communicate and behave in the world.

Meta programmes therefore affect, at an unconscious level, how we interact with the world, including how we behave, and how we communicate.

Commercial questionnaires that can be self-administered are available to identify meta programmes: the Motivation Profile Questionnaire (MPQ) (Arthur and Engel, 2000) was used in Miller and Deere (2000), Brown (2002; 2003) and Brown and Graff (2004).

Previous research using the MPQ had established the meta programme patterns of accounting lecturers (Brown, 2002) and compared the dominant meta programmes of accounting lecturers and accounting undergraduates (Brown, 2003). A qualitative study, based on accounting undergraduates, confirmed the importance of meta programmes to the teacher/student relationship in influencing how students perceive the quality of their lecturers. In particular, where a student's meta programme preference was different

from that of the lecturer, the student viewed the quality of teaching less favourably, even when factors such as being well-organised and knowledge of the subject were satisfied by the educator (Brown, 2004). There is potential to improve students' educational experience by educators using a teaching approach that matches the meta programme preferences of the students (Lawley, 1997). In order to tailor the teaching approach to the students' meta programme preferences, it is first necessary to identify the students' preferences, in the context of their education.

A separate study, which used the MPQ, identified statistically significant ($P < 0.01$) positive and negative correlations between meta programme patterns of accounting and other business undergraduates and their performance in summative assessments (Brown and Graff, 2004). Despite the generic nature of the MPQ, these findings confirmed the importance of meta programmes to major aspects of accounting students' educational experience: the teacher/student relationship and their performance in assessments.

Whilst providing some valuable insights into the relevance and importance of meta programmes in accounting education, there is scope for improvement to the MPQ since it is generic in nature. It comprises patterns, as shown in Table 1, not confirmed to be specifically relevant to higher education, and uses items that do not relate to particular contexts or activities. Yet meta programmes are considered to be context specific, as reflected in the definition by O'Connor and McDermott (1995, p. 79): 'a description of a set of behaviours that are evoked in a *certain context*' (emphasis added). An assessment instrument specific to higher education would therefore have the potential to identify those patterns particularly influencing an individual's education experience and provide clearer evidence, and a more tailored instrument, on which to base future research. Consequently, a research project was initiated to develop a new questionnaire, the *MPI*. The first stage, using semi-structured interviews, identified the patterns that were important in the context of students' educational experience (Brown, 2005).

When identifying patterns relevant to higher education the patterns 'through time'/ 'in time' and 'independent'/ 'cooperative' were found to be more relevant to higher education than the equivalent patterns in the MPQ: 'past'/'present'/'future' and 'people'/ 'places'/'activities'/'knowledge'/'things' respectively. In addition, 'seeing'/'hearing'/ 'sensing' was refined by the addition of 'auditory-digital'. Further, the pattern 'Aristotelian'/'non-Aristotelian', which is not included in the MPQ, was found to be particularly influential. During interviews, in addition to meta programme patterns, beliefs about intelligence emerged as key influences on students' behaviour. The work of Dweck (2000) has demonstrated that beliefs about intelligence can affect educational behaviour. In this respect there was thought to be an alignment with the influence of meta programmes on behaviour. The *MPI*, therefore, included questions relating to beliefs about intelligence, and consequently the broader term '*metacognitive patterns*' has been adopted to describe the final questionnaire. These patterns are shown in Table 1.

Method

The objective of piloting the *MPI* was to subject items to qualitative and statistical analysis to establish their reliability and validity as a means for identifying *metacognitive patterns*. Since *metacognitive patterns* influence an individual's choice of language and behaviour and are context specific (Charvet, 1997), question items were constructed to reflect appropriate language and behaviour of each pattern, tailored to the higher education context. A student with a liking for a particular *metacognitive pattern*, therefore, will respond positively to the items that have been framed in language that reflects that pattern. Since ten of the patterns comprised 'pairs' of two constructs, which can be viewed as conceptually

Table 1. *Metacognitive patterns* and associated variables

Motivation profile patterns	Equivalent *metacognitive patterns*	Pattern variables	Description
Towards/ away from	Towards/ away from	1. Towards 2. Away from	The direction of student's motivation
Past/present/future	Through time/ in time	1. Through time 2. In time	How students perceive time
Proactive/reactive	Proactive/ reactive	1. Proactive 2. Reactive	Propensity to take action or to reflect
Options/procedures	Options/ procedures	1. Options 2. Procedures	Preference for designing how to perform tasks or just following the procedure
General/detail	General/detail	1. General 2. Detail	Focus of attention preference for broad overview or specific detail
Internal/external	Internal/ external	1. Internal 2. External	Frame of reference, for judging own performance – their own internal standards or external sources of feedback
Seeing/hearing/ sensing	Visual/ auditory/ auditory–digital/ kinaesthetic	1. Visual 2. Auditory 3. Auditory–digital 4. Kinaesthetic	Preferred way of perceiving and remembering sensory inputs
People/places/ activities/ knowledge/things	Independent/ cooperative	1. Independent 2. Cooperative	Preference for working alone or in conjunction with others
Sameness/progress/ difference	Sameness/ difference	1. Sameness 2. Difference	Preference for stability or change
	Entity/ incremental (Dweck, 2000)	1. Entity 2. Incremental	Belief that intelligence is fixed and cannot be changed or that it can be developed
	Aristotelian/ non-Aristotelian	1. Aristotelian Non-Aristotelian	A preference for problems to have answers that are 'right or wrong'or a tolerance of less clear cut answers. Belief that reality is either clear cut or open to debate

opposite in nature, question items were developed to assess each of these contrasting constructs or variables. For example, the pattern 'towards'/ 'away from' identifies the direction of an individual's motivation; 'towards' motivation can be viewed as conceptually opposite to 'away from'. The *metacognitive patterns* and associated pattern variables that form the basis of the *MPI* are shown in Table 1.

The language and behaviour patterns chosen reflect the literature and findings of earlier research on meta programmes in accounting education. This enabled identification

of language patterns specifically used by students in the context of accounting education (Brown, 2004; 2005). The aim was also to present items designed for eliciting beliefs about intelligence derived from Dweck (2000). A Likert scale was chosen (Likert, 1932) with six choices, consistent with Dweck (2000), as a well-established format to reflect the direction (agreement or disagreement with the statement) as well as the strength of opinion (Raden, 1985).

Questionnaire items were tested prior to administering the *MPI* to students. To establish content validity, items were checked by experts trained in NLP and meta programmes for appropriateness of language and style (Coolican, 1999; Duff, 2001b). Second, the items were listed in random order, with a Likert response scale, and checked by ten adults who were not NLP trained. As a result of feedback received, items were deleted or amended and the total number of items was reduced from 218 to 142 to counter concerns over questionnaire acquiescence and respondent fatigue (Carmines and Zeller, 1979; Hinkin, 1995).

Items within each *metacognitive pattern* and across the *MPI* as a whole were then checked and amended to ensure the statements reflected an appropriate balance of cognitive, behavioural and affective foci (Christ *et al.*, 2003). The ordering of questions was also checked to ensure that there was appropriate divergence of subject matter between one statement and the next to reduce problems of bias due to acquiescence (Krosnick, 1999). Before the *MPI* was administered, the importance of the score and associated feedback to their own educational potential was explained to the students.

The *MPI* was administered to 862 students across a UK university. The composition of the group of respondents is summarised in Table 2. All accounting undergraduate and postgraduate students, some Association of Chartered Certified Accountants (ACCA) students and, where practical, students from other degree programmes across the university were invited to complete the *MPI*. This study, therefore, is based on a cross section of students but not a random sample. The *MPI* was administered to university students since the objective is to develop and test a questionnaire for specific use in the higher education context.

The *MPI* was administered to students by two methods: a paper-based questionnaire completed by 731 students in classrooms and an on-line version by 131 students in computer laboratories. The *MPI* initially asked for biographical details followed by a brief

Table 2. Respondents' profile

Programme	Number of students	Level of study	Number of students
ACCA (professional accounting examinations)	36	Foundation (0)	99
Accounting degrees	171	Level 1—year 1 undergraduate (or equivalent)	211
Humanities and applied sciences degrees	256	Level 2—year 2 undergraduate (or equivalent)	90
Other business degrees	399	Level 3– year 3 undergraduate (or equivalent)	281
		Level 4—Masters (or equivalent)	181
Total	862	Total	862

Sample total: 862 students (response rate 97%).
(494 females, 368 males) (575 UK, 287 non-UK).

instruction sheet explaining how it should be completed. This was followed by the 142 items and an invitation to participate in an interview.[3]

An on-line database enabled a score sheet, which included a description of typical behaviours relating to each pattern, to be made available for viewing on screen.[4] Once the paper-based questionnaires had been inputted, students were told how to access their results online. The availability of a result, albeit based on untested questionnaire items, provided a further opportunity to obtain feedback from the students. This took the form of a short online questionnaire, which appeared immediately after their results. Subsequently, 15 students attended interviews, the purpose of which was to assess the usefulness of the *MPI*.

Internal consistency reliability of the items, identifying each *metacognitive pattern* variable, was assessed using Cronbach's alpha coefficient (Cronbach, 1951; Duff, 2001a; Field, 2005). It is difficult to specify a value for the alpha coefficient. In the context of cognitive tests, an alpha coefficient of 0.8 is acceptable whilst for ability tests 0.7 is more appropriate (Kline, 1999). Alpha coefficients ranging from 0.52 are 'adequate for instruments in early stages of research' (Duff, 2001a, p. 188). Given that the *MPI* is a completely new questionnaire and that this is an exploratory study, a threshold alpha coefficient of 0.52 was chosen.

Exploratory factor analysis was used to test for 'unidimensionality'—the six items for each of the pattern variables should ideally cluster together as one 'factor' and load separately from the items measuring the conceptually opposite pattern variable—and to assess whether further improvement in reliability was possible. Since a research instrument is being developed, alpha factor analysis (Kaiser and Caffrey, 1965), which maximises the internal consistency reliability of the factor scores, was chosen. As *metacognitive patterns* may be correlated, an oblique rotation (direct oblimin, delta = 0) was selected (Duff, 2001b).

Results

Based on all items in the *MPI*. alpha coefficients for 13 of the pattern variables met the criteria for internal consistency reliability of at least 0.52 (Duff, 2001a). By excluding one item, the alpha coefficients of a further three pattern variables increased to above 0.52.

Correlation between the scores for the conceptually opposite pattern variables was calculated to assist in establishing construct validity (see Table 3). When computing the correlation between the scores of these pairs of variables, correlation should be negative.

Statistically significant negative correlations demonstrate construct validity of the items for five pairs of pattern variables at the 1% level and two pairs of pattern variables at the 5% level. The results that are of most concern are those with positive correlation. The result on 'towards'/'away from', 'general'/'detail' and 'proactive'/'reactive' is consistent with the low alpha coefficients for 'away from', 'general', 'proactive' and 'reactive'. The differences between the means for 'towards'/'away from', 'through time'/ 'in time', 'proactive'/'reactive', 'sameness'/'difference', 'entity'/'incremental' could indicate this sample of students has a greater tendency towards one of the two extremes of each pattern, or could suggest questionnaire bias.

Exploratory factor analysis enabled identification of items with an alpha coefficient above 0.52 for a further four pattern variables. The revised alpha coefficients are shown in Table 4 below.

Since language is fundamental to identifying *metacognitive patterns*, further analysis was based on the 575 UK students, 95% of whom stated that English was their first language (67% of the sample of 862 students indicated that English was their first

Table 3. Correlation between *metacognitive pattern* scores ($n = 862$)

Patterns	Pearson correl.	Sig. (2-tailed)	Mean		Standard deviation
Towards/away from	+.489[a]	<0.001	Towards	4.6	0.7
			Away from	3.3	0.6
Through time/in time	−0.500[a]	<0.001	Through time	4.1	0.8
			In time	3.0	0.6
Proactive/reactive	+0.027	0.425	Proactive	3.0	0.6
			Reactive	3.8	0.6
Options/procedures	−0.081[b]	0.017	Options	3.8	0.5
			Procedures	3.8	0.6
General/detail	+0.079[b]	0.02	General	3.5	0.5
			Detail	3.1	0.6
Internal/external	−0.119[a]	<0.001	Internal	3.6	0.5
			External	4.0	0.7
Sameness/difference	−0.074[b]	0.029	Sameness	3.0	0.6
			Difference	4.2	0.7
Entity/incremental	−0.469[a]	<0.001	Entity	2.4	0.8
			Incremental	3.5	0.8
Aristotelian/non-Aristotelian	−0.342[a]	<0.001	Aristotelian	3.8	0.7
			Non-Aristotelian	3.8	0.8
Independent/cooperative	−0.476[a]	<0.001	Independent	3.9	0.9
			Cooperative	4.0	0.8

[a]Correlation is significant at the 1% level.
[b]Correlation is significant at the 5% level.

language). Whilst there was a small improvement in the alpha coefficients, the extent of the improvement was not enough to indicate that the *MPI* would be inappropriate for students for whom English is not their first language.

Table 4 also includes the standard deviations of the pattern variable scores. These demonstrate some variability in responses suggesting that the scales are capable of differentiating within the sample.

The next stage of the study, which used the most reliable items identified, explored whether there were any statistically significant differences between the *metacognitive pattern* scores of students studying different degree programmes. The Kolmogorov-Smirnov and Shapiro-Wilk tests were statistically significant at the 1% level, indicating that the distribution of scores for all patterns is significantly different from 'normal'. Consequently, the pattern scores were compared using the Kruskal–Wallis test. The sample was split into four groups of students, as shown in Table 2. There is a statistically significant difference (at the 1% level) on 13 pattern variables, as shown in Table 5. For ten of these patterns, it is group 1, the students on the ACCA courses, which have the highest (five) or lowest (nine) scores.

Exploratory factor analysis, based on the most reliable items for each pattern variable, was then used to assess whether there were any relationships between the pattern variables, in particular to see whether the 'pairs' of pattern variables loaded as suggested by the theory. The extraction was based on an Eigenvalue of 0.8. The results of the analysis are shown in Tables 6 (a) and (b).

Table 4. Alpha coefficients post factor analysis

Pattern variable	No. of items	Mean—based on 1–6 scale	Standard deviation standardized	Alpha coefficient
Towards	3	4.7	0.9	0.66
Away from (1)	2	4.3	1.1	0.14[a]
Away from (2)	1	3.1	1.3	n/a[a]
Through time	4	3.7	1.0	0.69
In time	3	3.2	1.0	0.52
Proactive	3	3.7	0.9	0.57
Reactive	3	3.9	0.8	0.37
Options	4	4.4	0.7	0.61
Procedures	5	4.6	0.7	0.75
General	2	4.1	0.8	0.31
Detail	4	3.9	0.8	0.58
Internal	5	4.3	0.7	0.53
External	6	4.0	0.7	0.60
Visual	3	4.7	0.7	0.61
Auditory	2	4.1	1.1	0.70
Auditory digital	4	4.2	0.8	0.54
Kinaesthetic	3	4.4	0.8	0.32
Independent	4	4.1	1.0	0.82
Cooperative	5	4.2	0.9	0.83
Sameness	5	3.6	0.7	0.58
Difference	6	4.2	0.7	0.62
Entity	4	2.8	1.0	0.75
Incremental	5	4.3	1.0	0.81
Aristotelian	3	4.0	1.0	0.69
Non-Aristotelian	3	4.2	1.0	0.80

[a]When reviewing the 'away from' pattern variable, the alpha coefficients and factor analysis results suggested two distinct constructs. Hence, for the purpose of this exploratory analysis, two pattern variables were included for 'away from'.

Six 'pairs' of pattern variables which are conceptually opposite in nature load positively and negatively respectively on the same factor, which is consistent with the theory. These are highlighted in bold in Table 6(b). Factor 1 includes three 'pairs' of pattern variables ('options'/'procedures', 'general'/'detail', and 'Aristotelian'/'non-Aristotelian'); factor 3 comprises 'in time'/'through time'; factor 4 'independent'/'cooperative'; and factor 5 'entity'/'incremental'.

Factor 1 also comprises a combination or 'profile' of patterns—'procedures', 'detail', 'external', 'sameness' and 'Aristotelian'. It makes intuitive sense that these patterns should occur together suggesting a preference for doing things in a particular way, focusing on specific details, a need for feedback and reassurance from others, a liking for things to stay the same and having a tendency to believe that answers to problems should be either right or wrong. In contrast, factor 2 comprises the conceptually opposite 'options', 'general', 'internal', 'difference' and 'non-Aristotelian' respectively, suggesting a contrasting preference for designing how to do things, taking an overview of a subject, being more self assured, liking variety and difference and a tolerance of less clear cut answers.

Table 5. Differences between mean pattern variable scores based on programme of study

	Programme of study				
	1 ($n = 36$)	2 ($n = 171$)	3 ($n = 256$)	4 ($n = 399$)	Stat sig.
Pattern variable					
Towards	4.41	4.69	4.91	4.54	0
Away from (1)	4.03	4.34	4.58	4.13	0
Away from (2)	3.33	3.21	3.32	2.89	0.001
Through time	3.68	3.69	3.75	3.58	n.s.
In time	3.05	3.15	3.17	3.17	n.s.
Proactive	3.56	3.68	3.85	3.73	n.s.
Reactive	3.80	3.90	4.00	3.88	n.s.
Options	4.07	4.29	4.43	4.45	0.004
Procedures	4.62	4.70	4.70	4.49	0.003
General	3.85	3.93	4.12	4.15	0.001
Detail	3.93	3.91	4.16	3.70	0
Internal	4.24	4.26	4.30	4.32	n.s.
External	3.91	4.10	4.07	4.02	n.s.
Visual	4.55	4.72	4.72	4.63	n.s.
Auditory	4.00	4.11	4.14	4.11	n.s.
Auditory–digital	4.25	4.14	4.46	4.11	0
Kinaesthetic	4.42	4.53	4.47	4.32	0.039
Independent	4.26	4.09	4.15	4.07	n.s.
Co–operative	3.87	4.26	4.30	4.18	0.009
Sameness	3.77	3.63	3.73	3.54	0.009
Difference	3.85	4.16	4.23	4.23	0.008
Entity	3.03	2.74	2.72	2.82	n.s.
Incremental	4.24	4.19	4.27	4.31	n.s.
Aristotelian	4.36	4.25	4.00	3.87	0
Non-Aristotelian	3.70	3.86	4.32	4.30	0

Kruskal–Wallis test. n.s. – not statistically significant.

The next stage was to undertake an analysis comparing the students' scores for the nine factors for different degree programmes. For factors 1, 3, 5, 8 and 9, the Kolmogorov–Smirnov and Shapiro–Wilk tests were statistically significant at the 1% level, indicating that the distribution of scores for these factors are significantly different from 'normal'. Consequently, the factor scores were compared using the Kruskal–Wallis test. The results are shown in Table 7.

There are statistically significant differences between award groups for seven factors. The two groups of accounting students (groups 1 and 2) have the highest scores for factor 1 and the lowest scores for factors 2, 6 and 7. This is an interesting finding considering that factor 1 relates to the *metacognitive patterns* concerned with a detailed/procedural approach. Group 1, the ACCA students, have the lowest score for factor 8 and group 4 have the lowest score for factor 9.

A paper-based evaluation questionnaire was issued to students immediately after they completed the *MPI*. Students were also asked to complete a short evaluation questionnaire on-line immediately after they received their results. A summary of students' responses is shown in Table 8.

Table 6. Factor pattern matrix and (b) factor structure matrix for 92-item metacognitive pattern indicator ($n = 862$) after reliability analysis

	Factor								
	1	2	3	4	5	6	7	8	9
(a)									
Pattern variable									
Towards		0.472							
Away from (1)								0.801	
Away from (2)									0.459
Through time			−0.885						
In time			0.662						
Proactive						0.569			
Reactive									0.482
Options		0.431					0.322		
Procedures	0.482								0.343
General		0.456							
Detail									0.407
Internal		0.495							
External									0.534
Visual		0.321							
Auditory							0.401		
Auditory-digital									0.473
Kinaesthetic							0.447		
Independent			0.751						
Cooperative			−0.719						
Sameness									0.434
Difference		0.310							
Entity					0.890				
Incremental					−0.624				
Aristotelian	0.667								
Non-Aristotelian	−0.525								
Eigenvalues	4.1	3.7	1.8	1.7	1.3	1.1	1.0	0.9	0.8
% of variance accounted for	16.6	14.9	7.3	6.7	5.3	4.6	4.0	3.5	3.4
Cum. % variance accounted for	16.6	31.5	38.8	45.5	50.8	55.4	59.4	62.8	66.2
(b)									
Pattern variable									
Towards	0.505							0.440	
Away from (1)								0.764	
Away from (2)									0.441
Through time			**−0.877**						
In time			**0.664**						
Proactive						0.552			
Reactive									0.543
Options	**−0.439**	0.648					0.532		
Procedures	**0.622**								0.612

(Table continued)

Table 6. Continued

	Factor								
	1	2	3	4	5	6	7	8	9
General	**−0.322**	0.559					0.350		
Detail	**0.355**							0.344	0.536
Internal		0.633					0.373		
External	0.394								0.674
Visual		0.347					0.344		0.324
Auditory							0.456		
Auditory-digital						0.325			0.484
Kinaesthetic		0.378					0.520		
Independent				**0.717**					
Cooperative				**−0.748**					
Sameness	0.458					0.307			0.593
Difference		0.532				0.334	0.460		
Entity					**0.853**				
Incremental					**−0.652**			0.356	
Aristotelian	**0.724**								0.410
Non-Aristotelian	**−0.550**	0.388					0.436		
Eigenvalues	4.1	3.7	1.8	1.7	1.3	1.1	1.0	0.9	0.8
% of variance accounted for	16.6	14.9	7.3	6.7	5.3	4.6	4.0	3.5	3.4
Cum. % variance accounted for	16.6	31.5	38.8	45.5	50.8	55.4	59.4	62.8	66.2

Extraction method: Alpha factoring. Rotation method: Oblimin with Kaiser normalization. Only factor pattern coefficients > 0.3 included.

Table 7. Differences between mean factor scores based on programme of study

	Programme of study				
	1 ($n = 36$)	2 ($n = 171$)	3 ($n = 256$)	4 ($n = 399$)	Stat sig.
Factor					
Factor 1	0.335	0.283	0.016	−0.162	0
Factor 2	−0.368	−0.066	0.111	−0.010	0.004
Factor 3	−0.070	−0.045	−0.067	0.069	n.s.
Factor 4	0.339	−0.039	−0.068	0.030	0.029
Factor 5	0.256	0.006	−0.092	0.034	n.s.
Factor 6	−0.169	−0.091	0.150	−0.042	0
Factor 7	−0.279	−0.068	0.052	0.021	0.030
Factor 8	−0.211	0.028	0.250	−0.153	0
Factor 9	0.017	0.031	0.188	−0.136	0

Table 8. Students' evaluation of the *MPI*

Statement	Mean	Standard deviation
Paper-based evaluation administered BEFORE receipt of results.		
5 = Easy to understand 1 = Hard to understand	4.2	0.6
5 = Relevant to my education 1 = No relevance to my education	3.7	0.8
5 = Easy to relate to myself 1 = Difficult to relate to myself	4.0	0.7
5 = Helpful in making me think about myself 1 = No help in making me think about myself	3.9 0.9	
Online evaluation AFTER receipt of results		
This profile is consistent with what I know about myself	4.3	1.2
I found completing this questionnaire made me more aware of my patterns of thinking	4.1	1.8
I found the profile and illustration of patterns helpful in understanding myself more	4.0	1.8

6–Strongly agree; 5–agree; 4–tend to agree; 3–tend to disagree; 2–disagree; 1–strongly disagree; U–unable to answer.

To assess further the usefulness of the *MPI* students were interviewed after they had received the questionnaire results. Interviews with students provided some examples of the *MPI* improving metacognition:

> Comment 4 (pre-results): The questionnaire is a good way to think about myself when I am doing something.
>
> Interview 4: I do think it makes you think about how you are and how you do things because if I hadn't done this I wouldn't have thought about any of it. When I was reading it, it made me giggle thinking that is me.
>
> Interview 13: Some of it made me delve a bit deeper and realize they were right and it was putting it to paper and some of it I genuinely think is off the wall a little bit. Overall, I would say the content of it was at least 70–75% useful to me .... After reading this, I definitely feel I know more about myself than before I read it.

Students' comments in interviews indicate the relevance of the *MPI* to students' ability to 'learn to learn':

> Interview 6: So it can help to structure your learning into a way that's better for you and also to know what you're like as a person.
>
> Interview 12: after I got the results back it made me think about how I look at research, how I do my revision and work and slightly alter it to see if it will improve my results.... It's now allowed me to think right I've got all the details—fine, but how does all this detail fit into a bigger picture and ... does that change my understanding of it ...?

Discussion

The *MPI* represents an improvement on the previously available MPQ, which is generic in nature, in that it has been specifically developed for use in higher education. This is likely

to make it a more valid assessment tool since patterns have been found to be context specific (Charvet, 1997; Brown, 2005). Twenty of the 24 pattern variables identified using the *MPI* had acceptable reliability, with alpha coefficients of at least 0.52. In Brown (2003) lecturers and students scored more highly on 'towards' than 'away from', which is consistent with the results in this study. However, they scored more highly on 'proactive' than 'reactive', the opposite to the scores in this study. The attractiveness of the language of the statements is a key issue and it could be speculated that the current instrument progresses this issue with respect to 'proactive'/'reactive'.

The *MPI* has the potential to raise students' awareness of their *metacognitive patterns* to improve metacognition, viewed as a valid learning outcome in its own right (Gunstone, 1994). This is an important first step in the development of personal competencies, which is fundamental to the role of higher education (AICPA, 1999). Students' feedback suggests this has been achievable by means of completing the *MPI*.

Theorists of meta programmes suggest up to 51 patterns, the majority of which have 'pairs' of conceptually opposite pattern variables (Bodenhamer and Hall, 1997). The results of the exploratory factor analysis (Table 6) provide some confirmation of the conceptually opposite nature of the *metacognitive patterns* and some justification for having 24 scales.

Factors 1 and 2 comprise logical combinations or 'profiles' of patterns which is consistent with Sternberg (1997). Factor 1 in Table 6, the combination of 'procedures', 'detail', 'external', 'sameness' and 'Aristotelian', makes intuitive sense, suggesting a relatively 'rigid mindset', an example of which was identified in Brown (2005). The conceptually opposite patterns of 'options', 'general', 'internal', 'difference' and 'non-Aristotelian', which suggest a more open and flexible mindset, load on factor 2. This represents a new theory that relates patterns together into conceptually logical profiles.

The underlying philosophy of NLP is that each person is unique and different and that therefore any combination of these patterns could occur. Yet factors 1 and 2 suggest that, although metacognitive patterns are independent, in a higher education context they can be linked coherently. The significant differences between the scores on factors 1 and 2 of the accounting students, relative to the other students in the sample, appear to support the anecdotal evidence that certain professions attract individuals with particular profiles of patterns. Interestingly, both groups of accounting students score significantly higher on factor 1 and the accounting students in group 1 score significantly lower on factor 2. This is consistent with anecdotal evidence that accounting students tend to dislike subjects such as strategy, which involve a need for taking an overview of problems and issues and the ability to cope with and analyse information that is incomplete.

The potential existence of two groups of students with contrasting preferences has important implications for teaching. It would influence how they prefer to be taught. Students with the profile per factor 1 would prefer information to be presented in a step-by-step and detailed manner with a consistent approach maintained throughout. In contrast, students with factor 2 preferences would favour more variety in the approach, more freedom in how they approach the subject and would appreciate an overview, potentially becoming bored if given too much information. Some evidence of students preferring a teaching approach that matched their own preferences was identified in Brown (2004). The overriding message is the need for lecturers to be flexible in adopting a variety of approaches to attempt to accommodate these different preferences, rather than teaching in ways that suit their own preferences (Elton, 2003).

Students' evaluation of the *MPI* provided evidence that they find it easy to understand, easy to relate to self and relevant to their education. The usability of the *MPI*, by individuals not necessarily trained in NLP, is one of the major objectives of this project (Brown, 2005). Interviews with students provided some evidence that the *MPI* can influence

students' ability to 'learn to learn', an important aim of accounting education research (Rebele *et al.*, 1998; Kelly *et al.*, 1999).

Conclusion

This study aimed to develop a new questionnaire—the *MPI*—for identifying *metacognitive patterns* of students in the context of accounting education in particular and higher education in general. The development of an inventory that can psychometrically support 11 patterns is a very ambitious project. However, these patterns were all found, in earlier research, to be important to students' experience in higher education (Brown, 2005).

In terms of reliability, 20 pattern variables had alpha coefficients above 0.52 and, of these; seven pattern variables had an alpha coefficient of 0.7 or higher. Clearly, more work is needed on the *MPI* in order to improve internal consistency reliability and to test for dissonance.

Statistical analysis, based on the most reliable items for each pattern variable, revealed statistically significant ($P < 0.01$) differences between the *metacognitive patterns* of accounting students and other students.

Exploratory factor analysis provided confirmation that six of the 'pairs' of pattern variables can be viewed as conceptually opposite in nature. In addition, it revealed evidence of two intuitively logical and contrasting 'profiles' of patterns, the first ('procedures', 'detail', 'external', 'sameness' and 'Aristotelian') reflecting a preference for stability, whilst the second profile consisted of the opposite patterns ('options', 'general', 'internal', 'difference' and 'non-Aristotelian' respectively). The presence of these contrasting profiles has important implications for teaching since, if these preferences are reflected in a group of students, distinctly different teaching styles may be preferred by the two groups. Accounting students were found to have higher mean scores for the first of these profiles and lower scores for the second, suggesting less flexibility on the part of the accounting students relative to students studying other disciplines.

Student feedback confirmed the usefulness of the *process* of completing the *MPI* in helping them to think about themselves, encouraging reflection and improving metacognition. There was also support for the view that students found the *MPI* easy to understand and the results straightforward to apply, without the need for specialist training. Interviews revealed examples of results of the *MPI* being used by students to improve their awareness of the factors that influence how they learn.

In its current state, the *MPI* is an exploratory instrument, and further refinement is necessary in order to improve reliability if it is to be more widely used. Further developments include obtaining greater evidence of construct validity in terms of internal composition and to test the questionnaire's ability to demonstrate predictive validity. Work is needed to investigate whether *metacognitive pattern* scores correlate with established learning inventories or personality inventories.

Research is also needed to investigate the strength of the impact of the *MPI* on students' learning and self-management. In addition, an inter-temporal study would assess whether *metacognitive patterns* change over time as students progress through their studies. Other variables that can be investigated could be the comparison of patterns based on programmes of study, gender and ethnicity.

Notes

[1]Descriptions of *metacognitive patterns* can be found in Appendix 2.

[2]Descriptions of the meta programmes relevant to this research are included in Brown (2005) and in Appendix 2.

[3]An extract from the questionnaire is included in Appendix 1.

[4]These descriptions are included in Appendix 2.

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Appendix 1

Metacognitive Pattern Questionnaire instructions and sample of items

PART 1

BACKGROUND INFORMATION

1. Student Identification Number (SID)

_____

Circle ONE answer

2. Gender: Male/Female

3. Age: 18–21 / 22–25 / 26–30 / 31–40 / 41–50 / 51–60 / 61 +

4. How do you describe your ethnic origin?

White	☐	Black African	☐
Black Caribbean	☐	Black Other	☐
Chinese	☐	Indian	☐
Pakistani	☐	Bangladeshi	☐
Asian Other	☐	Other (please specify)	. . . . .

5. Is English your first language? Yes/No

6. If English is not your first language, what is your first language?

---

7. Indicate the country in which you finished your last 2 years of secondary schooling

---

8. Current award title:

(e.g. HND Business Studies, BA Accounting and Finance)

9. Current level of study: _____ (e.g. 1, 2, 3, 4)

10. Mode of study: _____ (FT = full-time or PT = Part-time)

PART 2

THE QUESTIONNAIRE

NOTES:

- The purpose of the questionnaire is to provide you with an assessment of your approach to your education
- Don't take too long over each question—but answer honestly!
- There are no right or wrong answers, only answers that relate to you.
- Don't be concerned that some questions may seem very similar.
- **Answer all questions as they relate to your own recent experience of education**
- All data will be held confidentially and individual data will not be released to other university staff.

How to complete the questionnaire:

Circle **ONE** number in response to each statement according to the following key:

Stronglyagree	Agree	Tend to agree	Tend to disagree	Disagree	Strongly disagree	Unable to answer
6	5	4	3	2	1	U

Only circle U:

- If you do not understand the question OR
- If it doesn't apply to you

Table A1. Sample of questionnaire items

		Strongly agree	Agree	Tend to agree	Tend to disagree	Disagree	Strongly disagree	Unable to answer
1.	I like a college course that allows me to do a bit of everything	6	5	4	3	2	1	U
2.	I find it hard to take criticism	6	5	4	3	2	1	U
3.	I am good at deciding what I do not want to do for a career	6	5	4	3	2	1	U
4.	I'm doing this course to give me lots of opportunities	6	5	4	3	2	1	U
5.	When something is over and done with I like to put it behind me	6	5	4	3	2	1	U

(*Table continued*)

Table A1. Continued

	Strongly agree	Agree	Tend to agree	Tend to disagree	Disagree	Strongly disagree	Unable to answer
6. I like to take action, sometimes without thinking first	6	5	4	3	2	1	U
7. In my lecture notes, I like to summarise what the lecturer is saying	6	5	4	3	2	1	U
8. When I learn new topics I identify how they are similar to what I already know	6	5	4	3	2	1	U
9. I like to make sure I've got the right answer	6	5	4	3	2	1	U
10. If you haven't done well, you can learn from the experience and do better next time	6	5	4	3	2	1	U

Appendix 2

Descriptions of Metacognitive Patterns Provided to Students

Score: Towards %
Away From %

Towards
You will be likely to move toward what you want and what you like, and will be motivated by a desire for things you want to have or goals you want to achieve. However, you may not notice any potential problems or omissions in a course of action, particularly if you are showing a high score for Towards with a low score for Away From. You may jump too easily into new ventures without thinking about the possible negative consequences of your actions. You need the prospect of benefits/rewards to motivate you (a 'carrot') rather than penalties or deadlines (a 'stick'). You may also be motivated towards doing the same thing again if it was successful in the past.

Away From
You will have a tendency to focus on problems and what can go wrong, and will be motivated by what you want to avoid, rather than what attracts you. Because you tend to think of things that could go wrong you may have trouble identifying what you want to achieve. You are motivated to meet deadlines in order to avoid any negative consequences (you need a 'stick' to motivate you, rather than a 'carrot'). Your caution can be used positively to proceed in a safe manner and your tendency to point out potential hazards in a course of action could make you an important asset to team working.

Score: Through Time %
In Time %

Through Time
You have a strong awareness of the passage of time and of the need to plan what you will be doing and how long it will take. This makes you good at handling a variety of activities, particularly if you have several tasks that need to be completed. On the other hand, you may miss out on the pleasures of today because you are more aware of the past and concerned with planning for the future. You may experience stress because you are unable to dissociate from the past and future and to just enjoy the present. You may plan incessantly what you will be doing in the future and may go through a long process before making a decision. You are likely to be on time for appointments and find it helpful to keep a diary.

In Time
You will live 'for the moment' and can easily get caught up in the 'here and now'. You will have a tendency to be late for appointments because you get involved with what you're doing and lose track of time. Learning from the past may be difficult for you because, in your view, the past is behind you and over and done with. You may also have difficulty planning because of your lack of awareness of the future. Rather, you can be fully involved in whatever you are doing at the time, and tend to take decisions spontaneously.

Score: Proactive: %
Reactive: %

Proactive
You will like to get things done. You may appear highly motivated, but can get into trouble by not giving as much thought to important issues as you do to urgent ones. You would prefer to take action, take the initiative and act quickly, with little thought or analysis of the consequences. You will have a tendency to be impatient and to do things without thinking them through first.

Reactive
You tend to put things off until the timing seems right. You will want to reflect on and analyse a situation before taking action. Or you will keep waiting for something external to happen to get you started, such as waiting for someone else to initiate action. Because of this, you may not achieve goals that are important to you, by not making decisions or taking action soon enough.

Score: Options: %
Procedures: %

Options
You tend to be innovative, and like to think of different ways of doing things. You will be motivated to find new solutions and to experiment with alternatives whenever you get the chance to do so. You can develop procedures, and are well suited to problem solving and systems design. However you are not so good at following procedures, and where rules are concerned you would rather make your own than follow others'. You enjoy being able to break the rules. You do not like decisions, because decisions are limitations. You like to start things and may not be as good at finishing them.

Procedures
You like to do things in an orderly and procedural way, and will be motivated to follow instructions written by someone else. Once you start a procedure you will be highly motivated to complete it and, once you have found a procedure that works, you like to keep returning to it. When you are given a proven way of doing things, you are motivated to follow that approach; without guidance, you can feel lost or stuck. You like to keep to the rules and do things the right way.

Score: General: %
Detail: %

General
You like to get the broad scope of a subject before you get down to the details. In fact, you can get easily bored or really turned off by too much detail. For you, 'less is more' and you can get impatient if someone tries to give you too much detail. When you're describing something you need to take care that you're not making it difficult for others to follow by only giving a vague outline (because you understand things in terms of the 'big picture')—another person who needs more detail might not be able to 'see' what you mean. You have a tendency to be a dreamer, and may get into difficulties by constantly expanding the scope of a piece of work.

Detail
You like to get a grip on the details of a subject first, and will want to know all the specific facts you can. Preciseness and accuracy are important to you. Because of this, you may end up getting deeply involved in an area that is unconnected with the overall direction your work should be taking. You could get swamped by the amount of information as you work towards the 'big picture' and end up missing the overall point. When describing something you need to take care you don't turn other people off because of your need to include all the details of a subject.

Score: Internal: %
External: %

Internal
You are confident in your own judgement and opinion. You know from within yourself when you are right and collect information to confirm your opinion. You treat other people's opinions or instructions as information which you decide to agree with or follow, or not. You may find it difficult to take criticism even when it's constructive, or to listen to and value the opinion of others.

External
You rely on the opinion of others to confirm whether you have done a piece of work well. You are dependent on feedback from others to decide both what is the right thing to do, and whether you have done something well. You may take feedback from others very seriously, and could interpret information provided by others as an instruction.

Score: Same: %
Difference: %

Same
You are likely to be good at recognising patterns because you look for similarities rather than differences. You would really prefer things to stay the same. In any new situation or subject you will be looking for something in common with your previous experience, or with what you have learned before. Because your tolerance of change is low you find change difficult to deal with.

Difference
You don't like things to stay the same and you thrive on change. You like to have new experiences and learn new things. You will only be able to stick at something long-term if you can incorporate enough change to satisfy your need for difference. Otherwise you may become bored and de-motivated. You will be able to point out different arguments about an issue.

Score: Aristotelian: %
Non-Aristotelian: %

Aristotelian
For you, life is very black or white. Things are either one thing or another, there cannot be any in-between. You are drawn to subjects where knowledge is certain and not open to debate. Because of your view of the world, you need to guard against being dogmatic and, for example, stereotyping other people.

Non-Aristotelian
You adjust your view of the world constantly in the light of what you are learning. You like the challenge of subjects where knowledge is not certain, but open to debate. You are able to accept that people have different views of the world. At the extreme, you may slip into a state of mind that considers everything is relative.

Score: Entity: %
Incremental: %

Entity
You believe that intelligence is a fixed trait and everyone has a set amount that can't be changed. Because of this, you have a tendency to pass up valuable learning opportunities because of a fear of failing. You may be inclined to give up if you're not able to do something at the first attempt.

Incremental
You believe that intelligence is not something 'fixed', but that it can be increased by learning. Because of this, you can thrive on challenge, and enjoy the opportunity to learn something new. You can push yourself hard to learn a new skill even though it may be very challenging to you.

Score: Independent: %
Cooperative: %

Independent
You have a preference for working alone. You like to take responsibility for your own motivation. You find you learn best when you can get on with something on your own. Even when required to work with a group, you would prefer to have your own task to complete. You may find it difficult to tolerate working with others and having to take account of their needs.

Cooperative
You like to work with other people. You like the camaraderie of just being with other people. You may find it hard to take responsibility for your own work. You may possible 'crowd' or 'cramp' others who prefer to work independently.

Score: Visual: % Auditory: %
Auditory digital: % Kinaesthetic: %

Visual
Your thinking process involves creating pictures in your mind. You understand things best when you can 'get the picture' in your mind's eye. Because you represent ideas and memories as mental images you learn best when there are diagrams that represent ideas. Your note-taking can be made more effective by using colours and shapes, and mind-mapping can be helpful in organising your thoughts. You talk rather fast and, because you've got the picture in your head of what you're talking about, you may skim over the details. Other people may notice your tendency to use your hands a lot when talking; that's your way of describing the pictures in your mind.

Auditory
You process your thinking with sounds. You learn best when you can talk things over with someone or listen to what someone has to say. You understand lectures best when you can tape them so you can listen to them again. You are more aware of the sound of a person's voice than what they are saying. You can be convinced more by what someone says to you than by what you read in a book.

Auditory Digital
For you, thinking is talking things over in your head. Words and their meanings are important to you. Words mean so much to you that language will tend to form a filter between you and real experience. You will 'live in your head' rather than living in the real world. Because you listen more to the voice in your head than to what others are saying, you may miss out on what others are saying to you. You may also miss the meanings people convey in their voice tone, which can make relationships difficult. You have a preference for analysing logically rather than responding emotionally.

Kinaesthetic
You process your thinking through bodily sensations. You learn best when you can be in touch with the physical world around you. This may either be by involving yourself in taking lots of notes, or by moving around. You also represent thoughts as feelings and use your intuitive sense to check whether things are correct or incorrect. You talk and breathe deeply. It may seem to you that you need a longer time than other people to think of what you want to say. It may also take you longer to understand things.